

## 2009 Census of Technology Report



"Making a Positive Difference through Education and Service"  
Chris Nicastro, Commissioner

September 2009

## I. Introduction

The Census of Technology (COT) is designed to assess Missouri's continuing investment in K-12 education technologies and to help guide forward efforts. It provides important data for the Department of Elementary and Secondary Education (DESE) to share with state and national decision-makers to increase public awareness and advance public policy and support for education technology. It provides local school districts with data to help identify needs and develop strategies to facilitate school improvement processes and compare district progress with statewide data. The COT is aligned with the *Missouri Education Technology Strategic Plan* (METSP) and is a primary data source for measuring progress toward meeting the state goals and objectives.

A technology survey has been collected annually since 1997. Prior to 2001, DESE contracted with the University of Missouri's Office of Social and Economic Data Analysis to administer the project. In 2001, the census was incorporated into the April cycle of DESE's online core data collection system. The 2001 COT was the first to be completed by all districts; data collected prior to 2001 were adjusted to estimate the entire population.

The COT has two parts: a district-level survey and a school building-level survey. The District Census assesses the levels of planning and training for the district as a whole and concentrates on hardware, software, and levels of connectivity for the administrative buildings and offices. Completed by district-level administrators and/or technology specialists, the District Census includes information for all Missouri school districts and charter LEAs.

The Building Census assesses planning and training needs for individual school buildings and focuses on hardware and levels of Internet connectivity in computer labs, libraries, and classrooms. Completed by building-level administrators or technology contacts, the Building COT collects data from preschools, elementary schools, middle schools, junior high schools, high schools, area career centers, and the majority of charter schools (those in operation at least one full year prior to the Census date). Exempted buildings include juvenile centers, special education cooperatives, buildings where attendance is reported at another building (such as a gifted center), or other buildings with no enrollment data.

The annual *Census of Technology Report* arranges current data for both the district and building levels (related to technology planning, technology professional development, hardware and support, Internet connectivity-distance learning, technology usage, and technology funding) and compares current data with information from previous years. Aggregated responses for the district and building census forms are provided in the Appendix.

This report is one of several documents that examine the use and effectiveness of education technologies in Missouri. Other evaluation information can be found in the Missouri Education Technology Strategic Plan reports, eMINTS Program research reports, annual technology program reports, project descriptions, and annual evaluation narratives – all of which may be accessed from the Instructional Technology website at <http://dese.mo.gov/divimprove/instrtech>.

For additional information regarding the Census of Technology, contact the Instructional Technology section by telephone at 573-751-8247 or email at [instrtech@dese.mo.gov](mailto:instrtech@dese.mo.gov).

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### III. Executive Summary

#### A. Overview

The **2008-09 Census of Technology** continued to show steady gains during the past school year. While modest, the gains represent consistent improvement in Missouri's schools with regards to technology readiness and use. Despite another year of sluggish economies at the state and local levels and another year of not funding the Technology Acquisition Grant Program, Missouri schools continued to improve access to education technologies for administrators, faculty, staff, and students, and report increases in their quality uses of those technologies.

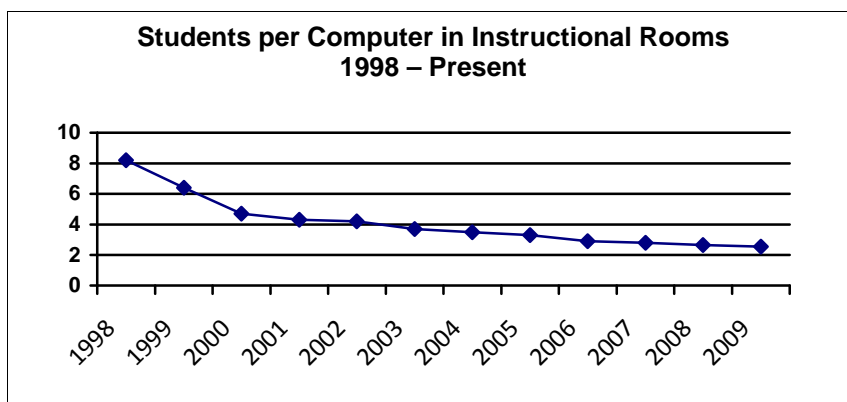
Current-year data indicate that more schools are connected to one another and the Internet, and more educational technologies are provided for teachers and students. Students, teachers, and administrators continue to become better skilled in using education technologies and, more importantly, continue to increase the frequency in which they use the technologies in meaningful ways.

#### INTERNET ACCESS

- 2,135 / **95 percent of schools have connectivity bandwidths greater than T1**, with 2,226 / 99 percent of school buildings having partial T1 or higher Internet connectivity.

#### COMPUTER ACCESS

- **372,913 computers** (desktops, laptops, and handhelds) are located in the buildings, with 349,372 / **94 percent located in instructional rooms**: 213,892 / 57 percent in classrooms, 107,222 / 29 percent in computer labs, and 28,258 / 7.6 percent in library media centers.
- On average, there are **2.39 students per computer** (all computers, located across all buildings), compared to 2.47 in 2008, 2.61 in 2007, 2.73 in 2006, 3.09 in 2005, 3.26 in 2004, 3.29 in 2003, and 3.8 in 2002 and 2001.
- There are **2.55 students per instructional computer** (located in instructional rooms), compared to 2.65 in 2008, 2.81 in 2007, 2.94 in 2006, 3.3 in 2005, 3.48 in 2004, 3.66 in 2003, 4.21 in 2002, 4.34 in 2001, 4.65 in 2000, 6.4 in 1999, and 8.15 in 1998.
- There are **4.17 students per classroom computer**, compared to 4.35 in 2008, 4.70 in 2007, 4.88 in 2006, 5.55 in 2005, 5.89 in 2004, and 6.42 in 2003).



➤ *The number of students per computer in instructional rooms has decreased from 8.15 students in 1998 to 2.55 students in 2008.*

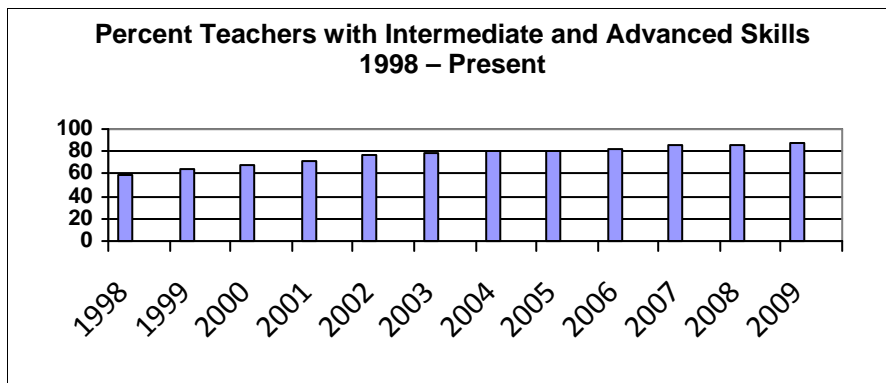
## PRINCIPAL TECHNOLOGY SKILLS

- Approximately **96 percent of principals/building administrators have intermediate and/or advanced technology skills**, compared to 95 percent in 2008, 93 percent in 2007, 92 percent in 2006, 91 percent in 2005, 92 percent in 2004, 90 percent of principals in 2003, and 82 percent in both 2002 and 2001.
- **98 percent of the principals routinely use email**, the same percent noted in 2008 and 2007, compared to 97 percent reported 2003 through 2006, 92 percent in 2002, and 74 percent in 2001.
- **85 percent of principals routinely conduct online research**, compared to 84 percent in 2008, 82 percent in 2007, 81 percent in 2006, 79 percent in 2005, 80 percent in 2004, 79 percent in 2003, 69 percent in 2002, and 58 percent in 2001.

## TEACHER TECHNOLOGY SKILLS

- About **83 percent of teachers routinely use educational software**, compared to 80 percent in 2008, 79 percent in 2007, 76 percent in 2006, 78 percent in 2005 and 2004, 76 percent in 2003, 71 percent in 2002, and 59 percent in 2001.
- **81 percent of teachers routinely use technology for lesson plan preparation**, compared to 77 percent in 2008, 71 percent in 2007, 68 percent in 2006, 66 percent in 2005 and 2004, 64 percent in 2003, 59 percent in 2002, and 45 percent in 2001.
- **88 percent of teachers have intermediate and/or advanced technology skills**, compared to 86 percent in 2008, 84 percent in 2007, 82 percent in 2006, 81 percent in 2005 and 2004, 79 percent in 2003, 76 percent in 2002, and 72 percent in 2001.

➤ *Rates of teachers with intermediate and advanced technology skills have increased from 59 percent in 1998 to 88 percent in 2009.*



## STUDENT TECHNOLOGY SKILLS

- On average, **80 percent of students routinely use educational software**, the same percent reported since 2003.

## B. Select Findings

### TECHNOLOGY PLANNING

- **All 551 districts and charter LEAs have state-approved technology plans**
- **2,229 / 99 percent of schools have building technology plans**, either as stand-alone plans or incorporated in district plans

## TECHNOLOGY PROFESSIONAL DEVELOPMENT

- **530 districts (96%) have board-approved education technology standards**
  - 85 percent have locally developed standards
  - 45 percent have adopted the National Educational Technology Standards (a jump from the 42 percent reported in 2007 and 35 percent in 2006)
  - 94 percent have standards for middle school/junior high students (grades 6-8), 91 percent for students in grades 3-5, 87.5 percent for PreK-2 elementary students, and 78 percent for high school students (grades 9-12)
  - 87 percent have standards for teachers, 85 percent for school administrators, and 77 percent for support services staff
- **At least 75 percent of staff have intermediate and/or advanced technology skills:**
  - 96 percent of school building administrators
  - 88 percent of teachers
  - 75 percent of school services staff
- **1,167 buildings have at least one teacher who has participated in the Comprehensive eMINTS** professional development program for teachers
  - 103 buildings have individuals trained as eMINTS Education Technology Specialists

## HARDWARE AND SUPPORT

- The **median district provides 1.00 FTE for technical maintenance and support**
  - Technical support for school buildings was most likely provided by district staff, followed by school certificated staff and other school staff
- **1-3 working days is the typical time-frame for resolving technical problems and repairs**

## INTERNET CONNECTIVITY AND DISTANCE LEARNING

- **89 percent of districts have district-managed networks that connect all district buildings**
- **District networks commonly support a number of administrative systems:**
  - accounting/payroll – 96 percent of districts
  - student attendance – 96 percent of districts
  - email/communications – 96 percent of districts
  - library catalog – 93 percent of districts
  - grade books – 91 percent of districts
  - discipline reports – 89 percent of districts
  - food service – 86 percent of districts
- **95 percent of school buildings have T1 Internet connectivity or higher**
- **81 percent of buildings support distance learning systems**
  - noninteractive, web-based online instruction – 1,271 buildings
  - cable television – 1,064 buildings
  - interactive television – 430 buildings
  - desktop videoconferencing – 345 buildings
  - satellite reception – 218 buildings

## TECHNOLOGY USAGE

- **All districts report that technology is integrated into at least one core curriculum:**
  - 98 percent – communications arts
  - 97 percent – science
  - 96 percent – mathematics
  - 94 percent – social studies
- **Almost all districts (97%) provide email accounts to staff:**
  - 97 percent – school administrators
  - 96 percent – teachers
  - 95 percent – other district staff
- **Few districts provide email accounts to students:**
  - 141 – high school students
  - 75 – middle school students
  - 45 – students in grades 3-5
  - 16 – students in PreK-2
- **Teachers and students routinely use email and educational software;** few (but increasing numbers) use selected online resources such as EBSCOhost

Buildings estimate the following routine use of technology, by application and user type:

| <i>Application</i>      | <i>Administrators</i> | <i>Teachers</i> | <i>Students</i> |
|-------------------------|-----------------------|-----------------|-----------------|
| Educational software    | 53%                   | 83%             | 80%             |
| Email                   | 98%                   | 98%             | 15%             |
| EBSCO host              | 17%                   | 26%             | 24%             |
| Electronic encyclopedia | 20%                   | 36%             | 38%             |
| Newsbank                | 10%                   | 15%             | 13%             |

- **Administrators, teachers, and students routinely use technology to produce print and multimedia products and conduct research**

Buildings estimate the following routine uses of technology, by function and user type:

| <i>Function</i>                                    | <i>Administrators</i> | <i>Teachers</i> | <i>Students</i> |
|--|-----------------------|-----------------|-----------------|
| Produce media, web, or multimedia products         | 70%                   | 69%             | 52%             |
| Produce written or print products or presentations | 85%                   | 86%             | 64%             |
| Communicate with peers, experts, others            | 96%                   | 95%             | 26%             |
| Communicate with parents and students              | 90%                   | 86%             | 19%             |
| Conduct online research                            | 85%                   | 83%             | 62%             |
| Participate in online courses (this year)          | 16%                   | 19%             | 5%              |
| Manage student records                             | 91%                   | 89%             | Na              |
| Track student performance                          | 90%                   | 89%             | Na              |
| Assess student performance                         | 81%                   | 85%             | Na              |
| Deliver and present instruction                    | 48%                   | 77%             | Na              |
| Prepare lesson plan(s)                             | Na                    | 81%             | Na              |

- **Building-level leadership and support is provided to help teachers integrate technology:**
  - library media specialist – 65 percent of buildings
  - school administrator – 55 percent of buildings
  - instructional technology specialist – 46 percent of buildings
  - teacher – 40 percent of buildings
  - district technology staff – 33 percent of buildings



- In the typical building, **70 percent of the teachers fully integrate technology into the curriculum**
- **99 percent of buildings have at least one technology-mediated feedback system:**
  - email – 2,194 buildings – 98 percent
  - voice mail – 1,445 buildings – 64 percent
  - automated absentee calling systems – 774 buildings – 34 percent
  - electronic bulletin board – 666 buildings – 30 percent
  - homework hotlines via the web – 488 buildings – 23 percent
  - listserv – 322 buildings – 14 percent
  - homework hotlines via the telephone – 289 buildings – 13 percent

#### TECHNOLOGY FUNDING

- **Districts spent \$150.54 million for technology-related activities and purchases – down from \$162.6 last year):**

| <i>District Budget Amounts</i> | <i>2008-09</i> | <i>2007-08</i> |
|--------------------------------|----------------|----------------|
| Average District               | \$273,218      | \$295,093      |
| Median District                | \$50,000       | \$55,000       |

- **414 districts (75 percent) filed E-rate applications, receiving over \$27 million in funding commitment decision letters (FCDLs)**
  - FCDLs totaled over \$27 million, ranging from \$74 to over \$8 million
  - The averaging was \$49.294 per district, with the median district receiving \$6,725
  - Districts reported being able to spend 50 percent of their E-rate discount savings to support education technology.

**Turn Page for Section IV: Detailed Findings**

## IV. Detailed Findings

This section of the *Census of Technology Report* details all current district- and building-level data, compares current data with previous years' data, and makes note of trends and/or anomalies found in data from the last several years.

### A. District Census

In total, 551 districts and charter LEAs completed the COT in spring 2009. The District Census is a quick survey, comprised of 11 items that address technology planning, standards, administrative systems and support, and budgeting. See Appendix A for copies of the district and school building surveys, completed with aggregated data.

Even with the continued loss of state funding (i.e., the Technology Acquisition Grant or TAG program), district responses to the COT indicate continued progress in technology readiness and use. Missouri districts appear to be making effective use of technology for administrative purposes, managing networks and systems that help improve district administration, data management, and communication.

#### TECHNOLOGY PLANNING

The district-level COT examines the presence of a board-approved and state-approved long-range education technology plan. A school district's long-range technology plan provides a road map for how the district will implement strategies that promote the district's mission, advance its comprehensive school improvement plan, and improve teaching and learning through the use of education technologies. DESE began approving technology plans in 1997 as a requirement for the E-rate program. Beginning in 1999, a state-approved technology plan became a requirement for participation in the state's technology grant programs and the MOREnet Technology Network Program. With the passing of the federal No Child Left Behind Act in 2001, DESE developed the 2002-2006 Missouri Education Technology Strategic Plan and updated accordingly the scoring criteria used to approve district education technology plans. The district technology plan approval process was revised again in 2008 to align with Department's new electronic Plan and electronic Grants system (ePeGs) and the 2007-2011 Missouri Education Technology Strategic Plan.

Early district technology plans dealt mostly with hardware and equipment and did little to address integration, student learning, or technology professional development. Now plans are much more comprehensive, as a result of the state plan and the scoring criteria for local plans both focusing on the development of plans that align with comprehensive school improvement plans and promote effective teaching strategies, student achievement, and adequate infrastructure and technical support.

#### Item 1 – State-approved technology plans

All districts have state-approved district technology plans. All district plans are approved using the scoring guide developed in 2002 in response to the No Child Left Behind Act and the Missouri state plan.

#### TECHNOLOGY PROFESSIONAL DEVELOPMENT

Professional development is a critical factor in teachers using technology in meaningful and effective ways. In November of 1997, the State Board of Education established policy that required buildings to allocate amounts equal to 20 percent of state technology grant funds for technology-related training. The policy went into effect for the 1998-1999 school-year. The

Title II.D (Ed Tech) Program, begun in 2002-2003, requires that 25 percent of formula and/or competitive grant funds be earmarked for professional development.

Data collected over the previous years indicate that teachers are increasingly interested in professional development sessions that address how to integrate technology into curriculum and instructional teaching strategies. Professional development is most effective when tied to comprehensive school improvement plans and to local, state, and national educational technology standards. The Missouri technology plan endorses the National Educational Technology Standards (NETS) for students, teachers, and school administrators developed by the International Society for Technology in Education (ISTE).

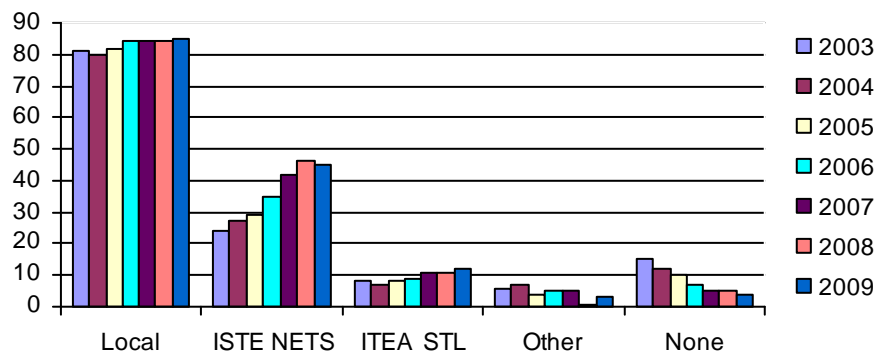
#### Item 2 – Educational technology standards

Added to COT in 2003, item two asked about the educational technology standards in place in the district. Standards provide guidelines for developing curriculum and guiding teacher and student behavior; they define a common agreement on what ought to be taught or learned. Also, educational technology standards serve as guidelines for planning technology-based activities in which students achieve success in learning communication and life skills.

In 2009, the vast majority of districts report having board-approved educational technology standards. Figure 1 shows that 85 percent (466) districts have standards developed by the district, 45 percent (248) have adopted the International Society for Technology in Education (ISTE) National Educational Technology Standards (NETS), and 12 percent (66) have adopted the Standards for Technological Literacy (STL) endorsed by the International Technology Education Association (ITEA). Only 21 districts (4 percent) reported having no board-approved standards. The 2009 data closely parallel the data collected 2003 through 2008, but also show a modest increase in the number of districts adopting the NETS (as proposed in the state plan) and a decrease in the number of districts having no board-approved standards. Note that many of those districts adopting the NETS also incorporate locally developed standards.

**Figure 1**

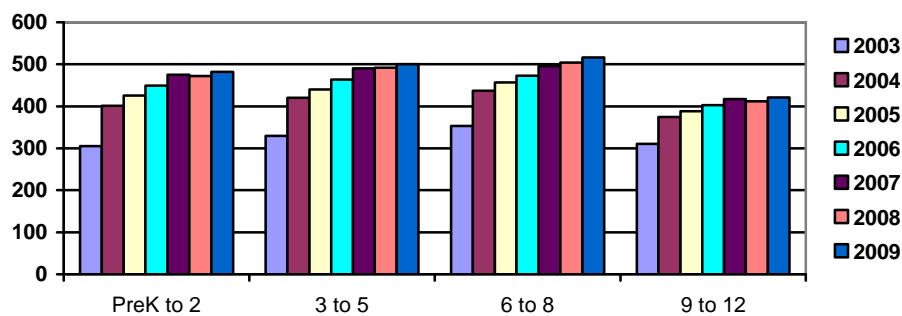
**Percent Districts with Education Technology Standards  
by Standard Type, 2003 – Present**



Over ninety percent of districts reported having technology standards for students: 87.5 percent (482 districts) have established standards for PreK-2 students, 91 percent (500) have standards for students in grades 3-5, 94 percent (516) have standards for middle school students, grades 6-8, and 76 percent (421) have standards for high school students. One hundred percent of districts that house area career centers also indicate having standards for career center students. The number of districts with established technology standards has increased for all grade levels each year since 2003, as indicated in Figure 2.

**Figure 2**

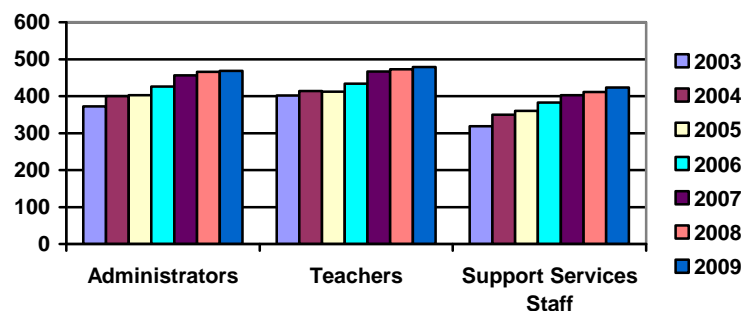
**Number Districts with Student Technology Standards  
by Grade Spans, 2003 – Present**



More than five of six districts (87 percent) report having technology standards for district employees: 87 percent (479 districts) have standards for teachers, 85 percent (468) have standards for administrators, and 77 percent (423) have standards for support services staff. Similar to the status of student standards, the number of districts that report having educational technology standards for school employees has increased from 2003 to 2009, as illustrated in Figure 3 below.

**Figure 3**

**Number Districts with Technology Standards for Faculty/Staff  
by Employee Type, 2003 – Present**



## HARDWARE AND SUPPORT

Technology integration is affected by the kinds of hardware and software that districts deploy and how well it is maintained. The district COT looks at who is responsible for technology hardware and support in the district, the administrative technologies in place in the district, and computer networking. Access to current technologies is an essential condition for district operations as well as for teaching and learning. Technology is essential to effective and efficient district administration, data management, and communications. Having district technology staff – to help plan, purchase, install, and support district technologies – is also important.

### Item 3 – District technology staff

Item three asked districts to estimate the total number of district-level, full-time equivalent (FTE) staff responsible for technical maintenance and support. Table 4 presents data collected from 2006 to the present. As indicated, the proportion of districts employing technology directors has remained at or near 93 percent, averaging 1.0 FTE. The percent of districts contracting for

technology services have grown from 30 to 38 percent, while the average number of hours has fluctuated.

**Table 4**

**District Technical Support, by Support Provider, 2006 – Present**

| <u>Employee</u>   | <u>Buildings</u> |             |             |             | <u>Non-Employee</u> | <u>Buildings</u> |             |             |             |
|-------------------|------------------|-------------|-------------|-------------|---------------------|------------------|-------------|-------------|-------------|
|                   | <u>2006</u>      | <u>2007</u> | <u>2008</u> | <u>2009</u> |                     | <u>2006</u>      | <u>2007</u> | <u>2008</u> | <u>2009</u> |
| Percent Districts | 94%              | 93%         | 94%         | 93%         | Percent Districts   | 30%              | 36%         | 39%         | 38%         |
| Median (FTE)      | 1.0              | 1.0         | 1.0         | 1.0         | Median (Hours)      | 200              | 271         | 80          | 100         |

**Item 4 – District-supported administrative systems**

Added in 2004, item four examines district administrative systems – electronic programs that are used to expedite the storage and use of data and information. Table 5 details the systems supported by a majority of the districts. Almost all districts have accounting systems and support automated student attendance, electronic mail (email), grade book, and library catalog. Since 2004, there has been a marked increase in the number of districts adding student discipline, student performance, grades, IEP management, and health services.

**Table 5**

**District Administrative Systems, 2004 – Present**

| <u>System Type</u>           | <u>Number of Districts</u> |             |             |             |             |             | <u>Increase<br/>since 2004</u> |
|------------------------------|----------------------------|-------------|-------------|-------------|-------------|-------------|--------------------------------|
|                              | <u>2004</u>                | <u>2005</u> | <u>2006</u> | <u>2007</u> | <u>2008</u> | <u>2009</u> |                                |
| Accounting/budgeting/payroll | 511                        | 513         | 517         | 532         | 539         | 531         | 20                             |
| Student attendance           | 461                        | 488         | 498         | 512         | 524         | 530         | 69                             |
| Communication/email          | 452                        | 478         | 489         | 507         | 522         | 530         | 78                             |
| Food service                 | 431                        | 420         | 451         | 470         | 476         | 474         | 43                             |
| Library catalog              | 432                        | 475         | 491         | 504         | 502         | 512         | 80                             |
| Grade book                   | Na                         | 393         | 431         | 467         | 489         | 501         | 108                            |
| Discipline                   | 355                        | 402         | 420         | 458         | 468         | 490         | 135                            |
| Health service               | 346                        | 374         | 402         | 421         | 442         | 452         | 106                            |
| IEP management               | 345                        | 382         | 401         | 427         | 443         | 452         | 107                            |
| Student performance          | 304                        | 341         | 365         | 379         | 392         | 413         | 109                            |

On the other hand, fewer than half of the districts report systems that support school safety (37 percent), teacher evaluation (38 percent), instructional management (42 percent), human resources (49 percent), extracurricular scheduling (45 percent), and distance education (48 percent) – although all these showed slight growth since 2006. [See Appendix for full listing of administrative systems.]

**Item 5 – District networks**

The use of an interconnected system of computers and peripheral equipment enables connected users to communicate and share information and resources. Revised in 2005, item five assumes that districts have computer networks and asks how many districts have all buildings in the district connected through a district wide (WAN) or local area (LAN) network.

For the first time in four years, the number of districts with district-wide LANs or WANs that connect all buildings in the district decreased. Compared to 91 percent noted in 2007 and 2009, only 89 percent of buildings reported district-wide connectivity in 2009. Table 6 compares the percentages noted since 2005.

**Table 6**

**Percent Districts with District-wide LAN or WAN, 2005 – Present**

|                   | <u>2005</u> | <u>2006</u> | <u>2007</u> | <u>2008</u> | <u>2009</u> |
|-------------------|-------------|-------------|-------------|-------------|-------------|
| Percent Districts | 85%         | 92%         | 91%         | 91%         | 92%         |

**TECHNOLOGY USAGE**

Previous items examined technology readiness, with integrating technology as the goal of making technology available and accessible. Technology usage items look at technology integration, the incorporation of technology resources and technology-based practices into daily routine – of districts, school employees, teachers, and students. At the district level, technology usage items check to see how districts support a culture that embraces technology and accepts technology as natural to the business of everyday work. Major goals of the Title II.D Program call for all districts to have technology integrated into core curricula and for students to be technology literate by the end of the eighth grade.

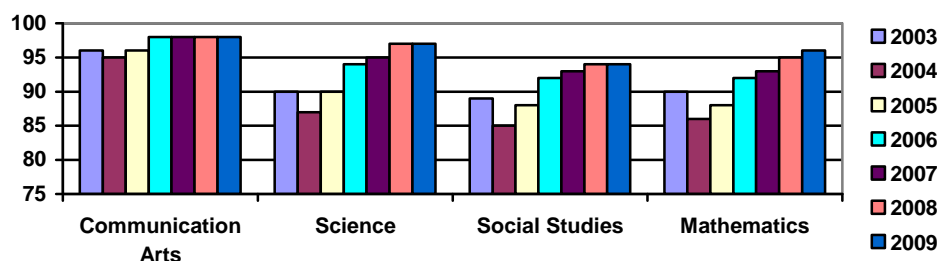
**Item 6 – Curriculum integration**

In Missouri, technology integration is defined as “written curriculum that incorporates content and processes (teaching, professional development, and assessment) related to technology resources, equity of resources, research and workplace readiness skills. Technology supports overall goals and objectives and makes possible and enhances the use of multiple instructional resources and teaching strategies (e.g., use of project-based learning, collaborative and cooperative learning, ongoing questioning, expert assistance, and critical analysis).”

This year, at least 94 percent of districts report technology is integrated in the four core content areas. As depicted in Figure 7, 540 districts (98 percent) report technology is integrated in communication arts, compared to 535 (97 percent) for science, 528 (96 percent) for mathematics, and 516 (94 percent) for social studies.

**Figure 7**

**Percent Districts with Technology Integrated in Curriculum by Subject, 2003 – Present**



In 2004, the state upgraded the definitions and/or standards related to technology integration, student technology literacy, and teacher technology integration skills in order to better align with national standards (NETS). The dip noted in the percentages of districts reporting to have technology integrated in the core curriculum areas in 2004 is a reflection of the revised definition for integration. The increases for 2005 through 2009, therefore, indicate more than just modest improvement.

### Item 7– District-provided email

Item 7 addresses the percentage of employees (by type) and students (by grade-level spans) who are provided email accounts. Table 8 shows that nearly all (97 percent) districts provide email accounts to employees, but only one-fourth of districts provide accounts to students. Note that districts that do provide staff email accounts, however, typically provide accounts for all administrators, teachers, and support staff. Interestingly, the 2009 numbers decreased very slightly with regards to email provisions for district employees and increased for students.

**Table 8**

**Number Districts with Email Accounts, by Account/User Type, 2003 – Present**

| <u>Population</u>        | <u>2003</u> | <u>2004</u> | <u>2005</u> | <u>2006</u> | <u>2007</u> | <u>2008</u> | <u>2009</u> |
|--------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| District Employees       |             |             |             |             |             |             |             |
| • School administrators  | 504         | 515         | 502         | 508         | 522         | 534         | 532         |
| • Teachers               | 499         | 510         | 495         | 498         | 518         | 530         | 529         |
| • Support services staff | 477         | 494         | 472         | 482         | 503         | 509         | 522         |
| Students                 |             |             |             |             |             |             |             |
| • Pre K-2                | 31          | 22          | 13          | 9           | 10          | 13          | 16          |
| • 3-5                    | 58          | 51          | 33          | 31          | 31          | 36          | 45          |
| • 6-8                    | 81          | 72          | 51          | 54          | 57          | 60          | 75          |
| • 9-12                   | 108         | 125         | 108         | 111         | 118         | 132         | 141         |

### Item 8 – Technology literacy

In 1997, COT began asking districts to estimate the percentage of sixth-grade students who are computer literate, a goal set forth by Governor Mel Carnahan in January of 1997. In 2004, the item was revised to address “technology literacy” rather than “basic computer skills” and revised again in 2005 to address eighth-grade students. These revisions better align the COT item with the Title II.D technology literacy goal.

The state defines student technology literacy as: “the ability to use appropriate technologies to communicate, solve problems, and access, manage, integrate, evaluate, and create information to improve learning and acquire lifelong knowledge and skills.” Aligned to the NETS for students, literate students should be able to apply strategies for identifying and solving routine hardware and software problems that occur during everyday use; exhibit legal and ethical behaviors when using information and technology; use content-specific tools, software, and simulations to support learning and research; design, develop, publish, and present products using technology resources that demonstrate and communicate curriculum concepts, and select and use appropriate tools and technology resources to accomplish a variety of tasks and solve problems.

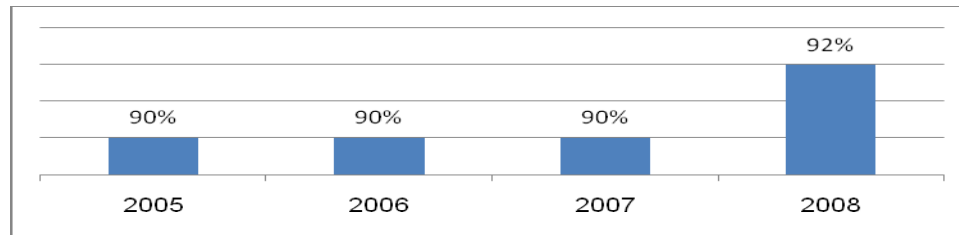
2008 was the last year that districts estimated student technology literacy for the Census. Beginning with the 2008-09 school year, districts entered their literacy determination for each eighth-grade student in the Department’s new Missouri Student Information System (MOSIS). These data are entered at the end of the school year, and are still being reviewed by staff.

Because 2009 MOSIS data for student technology literacy are not yet available, this report includes Figure 9 from the 2008 COT report. For the 2008 COT, the median district reported that 92 percent of its eighth-grade students meet the technology literacy standard, representing a two percent increase from the 90 percent that had been consistently reported since the definition change.



**Figure 9**

**Percent Eighth-grade Students Technology Literate, 2005 – 2008**



**TECHNOLOGY FUNDING**

Districts are asked about their technology funding habits to study budget trends with regards to how much districts spend on technology and how districts make use of the national E-rate program.

**Item 9 – Technology budgets**

Prior to 2005, districts entered amounts by budget category. The item was revised in 2005, asking for the total amount budgeted for technology for the current year. The Core Data Manual directs districts to include in the total, all costs related to:

*Hardware* – Computers, replacement computers, scanners, networked printers, color printers, headphone and peripherals (such as video recorder/player [VCR or DVD], projection systems, fax, and copiers)

*Instructional software* – Applications, curricular (original and upgrade licenses), multimedia materials and supplies, etc.

*Administrative software* – Network operating systems, student information systems, grading, attendance, etc.

*Professional development* – Trainers, support materials, mileage, stipends, substitute pay, conferences, etc.

*Connectivity/distance learning* – Internet access fees/charges, telecom connections, distance learning, satellite, cable, I-TV, etc.

*Technical support* – Maintenance contracts, replacement parts, materials, training, staff, etc.

*Infrastructure/retrofitting/other* – Telecom infrastructure, furniture, security, special interfaces, electrical upgrades, heat/air conditioning, wiring, asbestos abatement, etc.

For FY09, districts estimated spending nearly \$150.54, down substantially from the \$165.60 million budgeted for technology last year. As noted in Table 10, technology budgets increased steadily between FY05 and FY08, before the drop noted for FY09. It should be noted the totals for 2007 through 2009 represent larger numbers of respondents – which include the charter LEAs.

**Table 10**

**Technology Expenditures, 2005 – Present**

|  | <u>FY2004-05</u> | <u>FY2005-06</u> | <u>FY2006-07</u> | <u>FY2007-08</u> | <u>FY2008-00</u> |
|--|------------------|------------------|------------------|------------------|------------------|
| Total Technology Budget<br>(in millions) | \$105.86         | \$110.93         | \$135.76         | \$165.60         | \$150.54         |

The current total averages about \$273,218 per district. However, the average amount is inflated by the number of larger schools with access to greater resources. The typical (median) district reported a technology budget of only \$50,000, compared to \$55,000 in 2008 and \$50,000 reported in 2006 and 2007.

#### Items 10 and 11 – E-rate discounts

Item 10 asked districts if they participated in the Universal Service Fund's E-rate program this school year, and the estimated amount of discounts/savings. Item 11 asked what percent of the discount received through the E-rate program is used to support education technology activities and expenditures. Note: While MOREnet files an E-rate application on behalf district, charter school and state school members of the statewide network project (TNP), items 10 and 11 refer to district-filed applications for E-rate discounts.

Like last year, three of four districts (75%) received E-rate funding commitment decision letters, totaling over \$27 million. The amounts ranged from under \$74 to over \$8 million, with the state averaging \$49,294 per district. The median district reported receiving \$6,725 and being able to spend 50 percent of this amount to support education technology. Table 11 compares E-rate statistics reported 2003 through 2009. Again, note statistics since FY07 are influenced by the inclusion of the charter LEAs. Also, it should be noted that the new "2-in-5" rule went into effect for Funding Year 2005, which restricts some district participation in the E-rate program – eligible entities are only able to receive support for Internal Connections in two of every five funding years.

**Table 11**

#### **District E-rate Participation, 2002 – Present**

|                                  | <u>FY03</u> | <u>FY04</u> | <u>FY05</u> | <u>FY06</u> | <u>FY07</u> | <u>FY08</u> | <u>FY09</u> |
|----------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Number districts applying        | 374         | 381         | 414         | 404         | 399         | 411         | 414         |
| Percent districts                | 71%         | 74%         | 79%         | 77%         | 74%         | 75%         | 75%         |
| Discounts received (in millions) | \$41.0      | \$32.5      | \$29.7      | \$25.3      | \$25.7      | \$26.2      | \$27.2      |

## **B. School Building Census**

This section of the *Census of Technology Report* analyzes data from 2,250 buildings, compared to 2,245 buildings in 2008, 2,218 buildings in 2007, 2,229 buildings in 2006, 2,211 buildings in 2005, 2,207 buildings in 2004, and 2,250 buildings in 2003. The state summary report only covers those buildings with regular student populations. Data from juvenile centers, special education cooperatives, and other buildings (such as a gifted center) where attendance is reported at another building are not included in this report.

The school census is comprised of 18 items that are aligned to the Missouri State Education Technology Strategic Plan and its five technology focus areas and NCLB Title II.D program goals and federal reporting data elements. Items examine access and distribution of the building's technology resources, technical support, teacher and student technical skills, and the routine uses of technology by user and technology type or function. A copy of the survey with aggregated data is provided as an Appendix.

Overall, current data indicate steady, continued increases in the kinds and numbers of technologies that can be accessed in Missouri's school attendance centers, as well as in the ways school administrators, teachers, and students are using those technology resources.

A good number of the gains are modest, at best, are likely a result of the tight budget year as explained earlier in this report. Some of the differences (or the magnitude of differences) noted in data since 2003 can be attributed to the setting of higher standards (i.e., the changes in definitions for technology literacy and full integration) as described earlier, and to the change in reporting only buildings with regular student attendance.

## TECHNOLOGY PLANNING

As with the district COT, the building census examines the presence of a long-range technology plan. A school building plan, like a district plan, should provide a road map to help the school implement strategies that promote the district's mission, advance district and building improvement plans, and improve the teaching and learning occurring in the building.

### Planning Item 1 – Building technology plans

Building contacts are asked if buildings have technology plans and, if so, whether they are stand-alone plans and/or are embedded in district plans. When first surveyed, in 2000, only 69 percent of buildings had building technology plans. Table 12, showing data from 2003 to present, indicates that the vast majority of school buildings report having technology plans, with most of those building plans covered in their district technology plans.

**Table 12**

#### **Status of Building Technology Plans, 2003 – Present**

| <u>Percent Buildings</u> | <u>2003</u> | <u>2004</u> | <u>2005</u> | <u>2006</u> | <u>2007</u> | <u>2008</u> | <u>2009</u> |
|--------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Building Plan            | 95%         | 97%         | 98%         | 99%         | 99%         | 99%         | 99%         |
| Covered in District Plan | 88%         | 89%         | 92%         | 91%         | 91%         | 92%         | 94%         |
| Stand-alone Plan         | 6%          | 7%          | 6%          | 7%          | 8%          | 7%          | 5%          |

## TECHNOLOGY PROFESSIONAL DEVELOPMENT

The use of technology in a school setting requires professional development aimed at helping educators integrate the appropriate education technologies into appropriate curriculum content, instructional teaching strategies, and the day-to-day business of teaching and learning.

Teachers, principals and other building administrators, and school services staff need regular, ongoing, and quality professional development that helps them gain the confidence and skills needed in using the school's technologies in ways that promote district and school improvement plans and align with Show-Me Standards, board-approved curriculum, and board-approved educational technology standards.

### Training Item 1 – Technology skills of building staffs

Building contacts are asked to estimate the technology-related skill levels of principals/administrators, teachers, and support services staff. The skill level options are:

*Beginner* – basic technical skills including applications such as word-processing, some stand-alone software, and some Internet usage (email)

*Intermediate* – regular use of applications, software, and Internet resources for increased productivity and the use of applications including word-processor for student writing, research on the Internet, computer-generated presentations

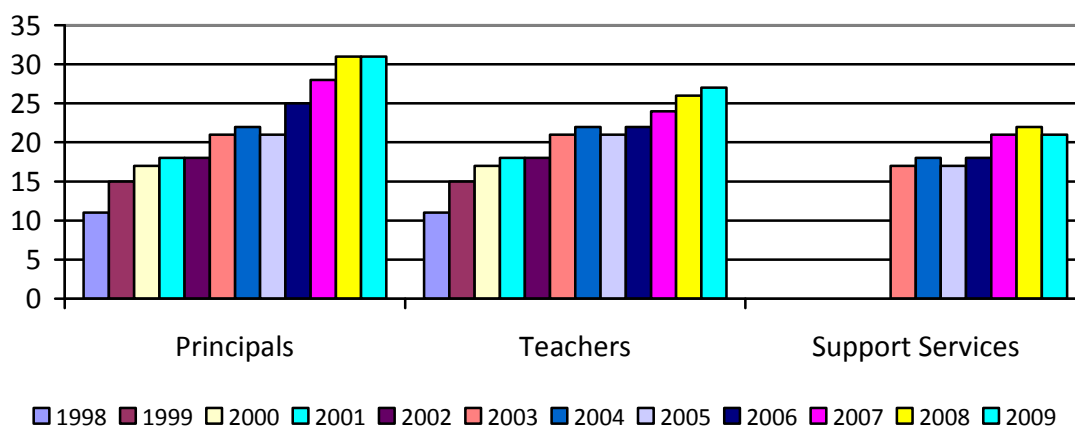
*Advanced* – complete integration and mastery of the technology, using it effortlessly as a tool to accomplish a variety of learning, instructional, and/or management tools

Since 1998, the percentages of staffs with beginner skills have decreased steadily while the percentages with advanced skills have increased. The proportion of teachers estimated as beginner technology users has decreased from 40 percent reported in 1999 to 12 percent in 2009. The rate of administrators (e.g., principals) estimated as having beginner skills has decreased from 35 percent in 1999 to 4 percent in 2009.

Figure 13 illustrates the percentages of teachers, building administrators, and support services staff as having advanced technology skills from 1998 to the present. (Note that the support services staff category was not included until 2003.) The rates of teachers reported as advanced users have more than doubled, from 11 to 27 percent. The group with the highest rate of advanced skills is administrators at 31 percent.

**Figure 13**

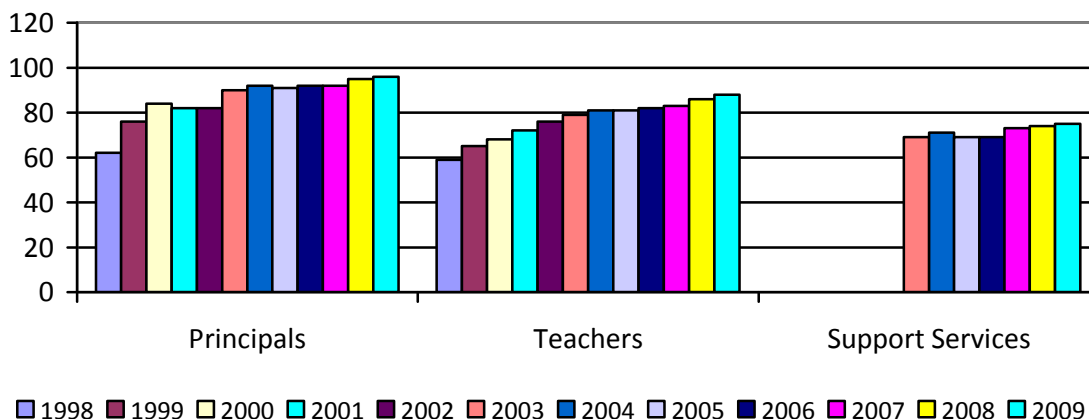
**Percent Faculty/Staff with Advanced Skills, 1998 – Present**



To meet the state's definition of technology literacy for educators, they must possess intermediate skills or higher. Figure 14, which combines intermediate and advanced skills, indicates this standard was met by 96 percent of administrators, 88 percent of teachers, and 75 percent of support services staff. (Note again that the support services staff category was not included until 2003.)

**Figure 14**

**Percent Faculty/Staff with Intermediate or Advanced Skills, 1998 – Present**



Training Item 2 – Number of teachers participating in education technology related professional development (including eMINTS)

Added in 2006, this item asks schools to report the number of teachers receiving education technology-related professional development by the number of hours completed. For 2009, buildings reported professional development information for 67,964 teachers, with 59,200 teachers (87 percent) participating in at least one hour of technology-related professional development, and about 13,000 (20 percent) having more than 15 hours.

Table 15 presents professional development data compiled since 2006. The data indicate a steady trend of increasing numbers of teachers receiving technology-related professional development, with the vast majority of teachers receiving fewer than 16 hours.

**Table 15**

**Number of Teachers Participating In Education Technology Professional Development (including eMINTS), 2006 – Present**

| <u>Hours Completed</u> | <u>2006</u>     |                  | <u>2007</u>     |                  | <u>2008</u>     |                  | <u>2009</u>     |                  |
|------------------------|-----------------|------------------|-----------------|------------------|-----------------|------------------|-----------------|------------------|
|                        | <u>Teachers</u> | <u>Buildings</u> | <u>Teachers</u> | <u>Buildings</u> | <u>Teachers</u> | <u>Buildings</u> | <u>Teachers</u> | <u>Buildings</u> |
| 1 to 15                | 35,652          | 1,717            | 40,348          | 1,894            | 45,577          | 2,003            | 46,109          | 2,044            |
| 15 to 30               | 8,557           | 870              | 6,492           | 823              | 7,741           | 894              | 8,192           | 926              |
| > 30                   | 3,368           | 622              | 3,095           | 602              | 3,916           | 705              | 4,899           | 734              |
| Total Hours            | 47,577          |                  | 49,935          |                  | 57,234          |                  | 59,200          |                  |

Training Item 3 – Number of eMINTS-trained teachers

Added in 2004, this item asks schools to report the number of teachers in the building who have completed one or both years of eMINTS professional development programs. The *enhancing* Missouri's Instructional Networked Teaching Strategies (eMINTS) program – that serves as the state's instructional model of technology integration – supports teachers as they learn to integrate multimedia technology into inquiry-based, student-centered, interdisciplinary collaborative teaching practices that result in improved student performance, increased parent involvement, and enriched instructional effectiveness.

The item was revised in 2006 to provide specificity about the numbers of teachers being trained in flagship eMINTS professional development programs: the Comprehensive eMINTS and the eMINTS4All programs for teachers, and the PD4ETS train-the-trainer program for education technology specialists.

*Comprehensive eMINTS* – The eMINTS Comprehensive Professional Development for Teachers (Comp PD) program is provided to official eMINTS teachers who have the full suite of required hardware and software. This two-year program is comprised of more than 250 contact hours delivered face-to-face and online by eMINTS staff members and by certified eMINTS Instructional Specialists who have successfully completed the Professional Development for Education Technology Specialists (PD4ETS) program.

*eMINTS For All (eMINTS4All)* – This two-year 90-contact hour program provides a subset of the Comp PD and requires less classroom technology. The eMINTS4All program is designed to help teachers in the grades prior to the official eMINTS classrooms to have a full understanding of the cognitive, social and technological skills that students will need to be successful in eMINTS, and to help teachers in other subject areas or in the grades following the official eMINTS classrooms to have a full understanding of the cognitive, social and technological skills of their eMINTS-experienced students.

*eMINTS Professional Development for Education Technology Specialists (PD4ETS)* – This is a two-year “train-the-trainer” program designed to prepare educators with the vision and skills necessary to lead their own schools or districts in the successful use of educational technology, based on the eMINTS instructional model. PD4ETS includes a rigorous certification process with significant levels of support from eMINTS staff both on-site and off. Successful completion of the certification process allows participants to deliver eMINTS comprehensive and eMINTS4All professional development to school or district educators for an annual access fee.

Table 16 indicates the numbers of eMINTS-trained teachers reported by schools in 2009. Over 26 percent of buildings reported having at least one eMINTS teacher, primarily located in elementary buildings. It should be noted that while the majority of eMINTS-trained teachers received their professional development from eMINTS instructional staff, more and more teachers are receiving their professional development through district staff that has completed the eMINTS train-the-trainer program.

**Table 16**

**Number of Teachers participating in eMINTS Professional Development – 2009**

| <u>eMINTS PROGRAM</u>          | <u>None</u><br><u>(Buildings)</u> | <u>Completed</u><br><u>year 1 only</u> | <u>Completed</u><br><u>both years</u> |
|--------------------------------|-----------------------------------|--|---------------------------------------|
| Comprehensive eMINTS           | 1,741                             | 585 / 210 Buildings                    | 422 / 1167 Buildings                  |
| Other two-year eMINTS programs | 2,130                             | 192 / 55 Buildings                     | 392 / 87 Buildings                    |
| eMINTS for Ed-Tech Specialists | 2,164                             | 42 / 28 Buildings                      | 103 / 65 Buildings                    |

Table 17 incorporates COT data and eMINTS National Center records to report on the total numbers of educators completing the two-year Comp PD, eMINTS4All, and PD4ETS programs.

**Table 17**

**Number of eMINTS-Trained Educators by Professional Development Program, 2006 – Present**

| <u>eMINTS Program</u> | <u>eMINTS Educators</u>        |                                  |                                  |                                  | <u>Total</u><br><u>To-Date</u> |
|-----------------------|--------------------------------|----------------------------------|----------------------------------|----------------------------------|--------------------------------|
|                       | <u>2006</u><br><u>Baseline</u> | <u>2007</u><br><u>Completers</u> | <u>2008</u><br><u>Completers</u> | <u>2008</u><br><u>Completers</u> |                                |
| Comprehensive eMINTS  | 1,136                          | 105                              | 183                              | 194                              | 1,618                          |
| eMINTS4All            | <u>Na</u>                      | <u>152</u>                       | <u>64</u>                        | <u>182</u>                       | <u>398</u>                     |
| Teacher Sub-total     | 1,136                          | 257                              | 247                              | 376                              | 2,016                          |
| Ed-Tech Specialists   | <u>82</u>                      | <u>22</u>                        | <u>3</u>                         | <u>17</u>                        | <u>124</u>                     |
| <b>TOTAL</b>          | <b>1,218</b>                   | <b>279</b>                       | <b>250</b>                       | <b>393</b>                       | <b>2,140</b>                   |

## HARDWARE AND SUPPORT

Hardware and support items deal with technology access and support issues at the building level. These cover items such as the kinds and level of technical support, the numbers of computers by type and location (and student per computer ratios), and the kinds of technologies available in classrooms and other instructional rooms.

### Hardware Item 1 – Building technical support

Building contacts were asked to detail the people (staff employed by the district) or others (non-employees) who were directly responsible for technical maintenance and/or support of the building's hardware. In general, buildings engage employees rather than non-employees to provide technical support.

Table 18 indicates the kinds of staff and others most likely to perform these duties since 2006. This year, 93 percent of all buildings reported having employees responsible for technical maintenance and support, compared to 94 percent in 2007 and 2008, and compared to 95 percent in 2006. The number of staff varied widely across the buildings, with the median building reporting 1.15 FTE, compared to 1.09 FTE in 2008, 1.1 in 2007, and 1.2 in 2006. For all years, this role was filled predominantly by district technology staff.

Just over 30 percent of buildings had contractors, vendors, or others perform technical maintenance and/or support. This year, the average number of hours reported was 10. Buildings that relied on non-employees predominantly contracted outside vendors: one of four building worked with vendors while one in nine relied on student assistance. Between 2006 and 2008, the number of contract hours increased, while the number of FTEs decreased. Interestingly the employee FTE increased in 2009 while non-employee hours decreased.

**Table 18**

**Building Technical Support, by Support Provider, 2006 – Present**

| <u>Employee Type</u>      | <u>Buildings</u> |             |             |             |
|---------------------------|------------------|-------------|-------------|-------------|
|                           | <u>2006</u>      | <u>2007</u> | <u>2008</u> | <u>2009</u> |
| District technology staff | 80%              | 82%         | 81%         | 86%         |
| School certificated staff | 31%              | 28%         | 24%         | 21%         |
| School non-cert. staff    | 27%              | 22%         | 20%         | 19%         |
| None                      | 5%               | 6%          | 6%          | 7%          |
| Median FTE                | 1.2              | 1.1         | 1.09        | 1.15        |
|                           |                  |             |             |             |
| <u>Non-Employee Type</u>  | <u>2006</u>      | <u>2007</u> | <u>2008</u> | <u>2009</u> |
| Vendors/contractors       | 27%              | 30%         | 25%         | 23%         |
| Students                  | 9%               | 8%          | 7%          | 11%         |
| Parents/community         | 1%               | 1%          | <1%         | 1%          |
| None                      | 66%              | 63%         | 69%         | 69%         |

Hardware items 2 and 3 – Computers in the building

Annually, buildings complete tables to indicate computers by type and location. Hardware and Support item 2 counts computers by platform and speed capacity and item 3 counts multimedia-equipped and Internet-connected computers. Locations include computer labs (rooms specifically designated for computer work); classrooms; library media centers; and administrative offices (such as a principal or guidance counselor office). In 2005, the classroom location was divided into grade spans of PreK-2, 3-5, 6-8, 9-12, and area career centers and included data collection related to handheld devices. In 2009, item 2 was revised so “computer type” reflected a computer’s age rather than its speed capacity. The new computer types (ages) include less than 1 year, 1-3 years, 4-5 years, and 6 years or older.

Table 19 summarizes the numbers of computers reported this year. Sub-totals and totals are provided, related to the different locations and computer types. Where applicable, percentages are also reported, as well as ratios – the numbers of students per computer type and location.

*Computer Location:* Headings include Classroom Details (highlighted in light green) for computers located across the grade spans and area career centers; Instructional Room Details (highlighted in light turquoise) for computers located in all classrooms plus computer labs and libraries; and, Total Computers (highlighted in pale blue) that makes a distinction between instructional and administrative uses of computers.

*Computer Type:* The item still itemizes separately Apple/Mac and PCs and PC-compatible computers and handheld devices. Sub-headings detail multimedia and Internet-connected devices.

**Table 19**

**Number, Type, and Location of Computers, and Related Statistics\* – 2009**

| Computer Type and Location | Classroom Details |              |              |              |                | Instructional Room Details |               |                 | Total Computers      |              |               |
|----------------------------|-------------------|--------------|--------------|--------------|----------------|----------------------------|---------------|-----------------|----------------------|--------------|---------------|
|                            | PreK-2            | 3-5          | 6-8          | 9-12         | Career Centers | Class Rooms (C total)      | Computer Labs | Library Centers | Instruct. (IR total) | Admin.       | TOTAL         |
| <b>Apple/Mac</b>           |                   |              |              |              |                |                            |               |                 |                      |              |               |
| < 1 Year                   | 419               | 939          | 685          | 1509         | 154            | 3706                       | 2308          | 286             | 6300                 | 215          | 6515          |
| 1 – 3 Years                | 2349              | 3145         | 3295         | 3090         | 208            | 12087                      | 6106          | 2083            | 20276                | 626          | 20902         |
| 4 – 5 Years                | 1291              | 1528         | 1655         | 738          | 155            | 5367                       | 2775          | 916             | 9058                 | 255          | 9313          |
| ≥6 Years                   | 1820              | 1582         | 1285         | 1110         | 191            | 5988                       | 1746          | 454             | 8188                 | 152          | 8340          |
| Sub-total                  | 5879              | 7194         | 6920         | 6447         | 708            | 27148                      | 12935         | 3739            | 43822                | 1248         | 45070         |
| <b>PC/PC-Comp.</b>         |                   |              |              |              |                |                            |               |                 |                      |              |               |
| < 1 Year                   | 2753              | 4366         | 4409         | 8128         | 1122           | 20778                      | 15291         | 3177            | 39246                | 2687         | 41933         |
| 1 – 3 Years                | 10735             | 16484        | 15543        | 24591        | 3288           | 70641                      | 41323         | 10271           | 122235               | 9886         | 132121        |
| 4 – 5 Years                | 8940              | 13167        | 11134        | 17301        | 3089           | 53631                      | 25361         | 7017            | 86009                | 5770         | 91779         |
| >6 Years                   | 6792              | 8440         | 6413         | 7594         | 1169           | 30408                      | 11308         | 3227            | 44943                | 2573         | 47516         |
| Sub-total                  | 29220             | 42457        | 37499        | 57614        | 8668           | 175458                     | 93283         | 23692           | 292433               | 20916        | 313349        |
| Total Computers            | 35099             | 49651        | 44419        | 64061        | 9376           | 202606                     | 106218        | 27431           | 336255               | 22164        | 358419        |
| Ratio                      | 5.79              | 4.11         | 4.56         | 4.41         | NA             | 4.40                       | 8.40          | NA              | 2.65                 | NA           | 2.49          |
| <b>Handhelds</b>           |                   |              |              |              |                |                            |               |                 |                      |              |               |
| All Handhelds              | 1461              | 4194         | 2817         | 2607         | 207            | 11286                      | 1004          | 827             | 13117                | 1377         | 14494         |
| <b>ALL COMPUTERS</b>       | <b>36560</b>      | <b>53845</b> | <b>47236</b> | <b>66668</b> | <b>9583</b>    | <b>213892</b>              | <b>107222</b> | <b>28258</b>    | <b>349372</b>        | <b>23541</b> | <b>372913</b> |
| Ratio                      | <b>5.56</b>       | <b>3.79</b>  | <b>4.28</b>  | <b>4.24</b>  | NA             | <b>4.17</b>                | <b>8.32</b>   | NA              | <b>2.55</b>          | NA           | <b>2.39</b>   |
| <b>MULTIMEDIA DEVICES</b>  | 33453             | 48134        | 42083        | 61632        | 8527           | 193829                     | 103444        | 26275           | 323448               | 22161        | 345709        |
| (Percent)                  | (92%)             | (89%)        | (89%)        | (92%)        | (89%)          | (91%)                      | (96%)         | (93%)           | (93%)                | (94%)        | (93%)         |
| Ratio                      | 6.08              | 4.24         | 4.81         | 4.58         | NA             | 4.60                       | 8.62          | NA              | 2.76                 | NA           | 2.58          |
| <b>CONNECTED DEVICES</b>   | 34429             | 50884        | 44054        | 65304        | 8703           | 203374                     | 106793        | 27794           | 337961               | 23458        | 361419        |
| (Percent)                  | (94%)             | (94%)        | (93%)        | (98%)        | (91%)          | (95%)                      | (99%)         | (98%)           | (97%)                | (99%)        | (97%)         |
| Ratio                      | 5.90              | 4.01         | 4.59         | 4.33         | NA             | 4.39                       | 8.35          | NA              | 2.64                 | NA           | 2.47          |

\* Ratios are based on the 2008-09 K-12 student population: 892,078  
[203,753 K-2, 204,005 3-5, 202,379 6-8, and 282,441 9-12]

This year buildings reported a total of 372,913 devices: 12 percent are Apple computers, 84 percent are PC/PC-compatible computers, and 4 percent are handhelds. Nearly 58 percent of computers (215,965) are modern, purchased within the last three years; over 85 percent (317,000) of computers were purchased in the last five years. Over 97 percent of all computing devices are connected to the Internet, and 93 percent have multimedia capacity.

Table 20 compares key computer statistics since 2005 (when handhelds and grade spans were added). The 2009 total of 372,913 computers represents a 28 percent increase since 2005; however, this year's increase represents only a modest 2.8 percent. Not surprisingly, the largest percent increase was noted between 2005 and 2006, which is the last year dedicated technology funding was available to districts. Missouri opted to distribute all of the NCLB Title II.D funds via competitive grants, in fiscal years 2007, 2008, and 2009, when that program's nationwide appropriation was cut to under \$275 million.



The rates of PC-compatible machines and the distribution of computing devices across classrooms and other instructional rooms have remained fairly constant the last several years. The rate of computers located in a lab setting remains steady at or near the 30 percent range, after a high of 36 percent in 1998. The percentage of computers residing in classrooms has ranged between 55 and 57 percent since 2005. While the number of handheld devices has increased each year, handhelds only account for three to four percent of the total.

**Table 20**

**Number, Type, and Location of Computers, 2005 – Present**

|  | <u>2005</u> | <u>2006</u> | <u>2007</u> | <u>2008</u> | <u>2009</u> |
|--|-------------|-------------|-------------|-------------|-------------|
| Total computers (all devices)            | 299,113     | 328,058     | 343,306     | 362,638     | 372,913     |
| <i>Percent change from previous year</i> |             | +9.7%       | +4.6%       | +5.6%       | +2.8%       |
| • Percent desktop/laptop computers       | 97%         | 96%         | 96%         | 96%         | 96%         |
| • Percent PC-compatible computers        | 85%         | 85%         | 86%         | 87%         | 84%         |
| • Percent multimedia devices             | 86%         | 92%         | 95%         | 95%         | 93%         |
| • Percent handheld devices               | 3%          | 4%          | 4%          | 7%          | 4%          |
| • Percent instructional devices          | 93%         | 93%         | 93%         | 93%         | 94%         |
| ○ Percent located in classrooms          | 56%         | 55%         | 56%         | 57%         | 57%         |
| ▪ Grades PreK-2                          | 18%         | 18%         | 17%         | 18%         | 17%         |
| ▪ Grades 3-5                             | 26%         | 26%         | 27%         | 27%         | 25%         |
| ▪ Grades 6-8                             | 21%         | 21%         | 22%         | 21%         | 22%         |
| ▪ Grades 9-12                            | 30%         | 30%         | 29%         | 30%         | 31%         |
| ▪ Area career centers                    | 4%          | 4%          | 4%          | 5%          | 4%          |
| ○ Percent located in computer labs       | 29%         | 30%         | 30%         | 29%         | 31%         |
| ○ Percent located in library centers     | 7%          | 7%          | 8%          | 7%          | 8%          |

Table 21 details the Internet-connectivity (wired or wireless) by computer type and location. As in previous years, and as one might expect, desktops predominantly had wired Internet connections and laptops had wireless connections.

**Table 21**

**Number and Location of Internet-connected Computers – 2009**

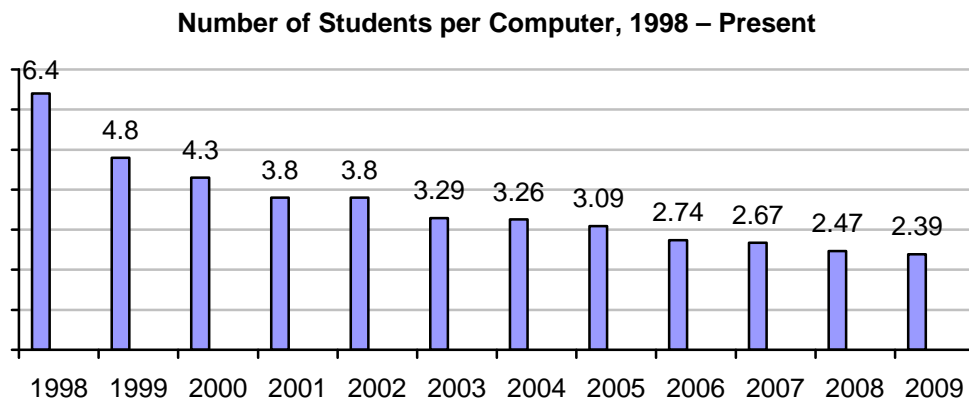
| <u>Connection Type</u> | <u>Labs</u> | <u>Classrooms</u> |            |            |             |            | <u>LMCs</u> | <u>Admin.</u> | <u>Total</u> |
|------------------------|-------------|-------------------|------------|------------|-------------|------------|-------------|---------------|--------------|
|                        |             | <u>PreK-2</u>     | <u>3-5</u> | <u>6-8</u> | <u>9-12</u> | <u>ACC</u> |             |               |              |
| Total Connected        | 106,793     | 34,429            | 50,884     | 44,054     | 65,304      | 8,703      | 27,794      | 23,458        | 361,419      |
| Wired                  |             |                   |            |            |             |            |             |               |              |
| Desktops               | 83,987      | 29,259            | 40,324     | 32,952     | 50,607      | 7,273      | 22,691      | 18,941        | 286,034      |
| Laptops                | 1,928       | 821               | 1,567      | 1,212      | 1,908       | 407        | 615         | 1,562         | 10,020       |
| Handhelds              | 57          | 345               | 894        | 573        | 229         | 58         | 7           | 203           | 2,366        |
| Wireless               |             |                   |            |            |             |            |             |               |              |
| Desktops               | 1,985       | 308               | 1,836      | 553        | 1,163       | 143        | 412         | 173           | 6,573        |
| Laptops                | 18,598      | 3,471             | 5,789      | 8,338      | 10,876      | 797        | 3,906       | 1,916         | 53,700       |
| Handhelds              | 229         | 225               | 474        | 426        | 521         | 25         | 163         | 663           | 2,726        |

**Students to Computer Ratios**

Ratios are determined using the COT data (numbers and types of computers) and Core Data fall enrollment figures. As schools purchase new computers, older computers may be relocated within the district or surplussed out of the district. The number of computers in use continues to climb, resulting in a steady improvement in the ratio of students per computer. The most dramatic improvement involves Internet-connected ratios, as more computers are connected to district networks and to networks are connected to the Internet.

Figure 22 indicates the number of students per computer (all devices located across all buildings) since 1998. As noted, the ratio has decreased steadily, from 6.4 students per computer in 1998 to fewer than 2.5 students in 2008.

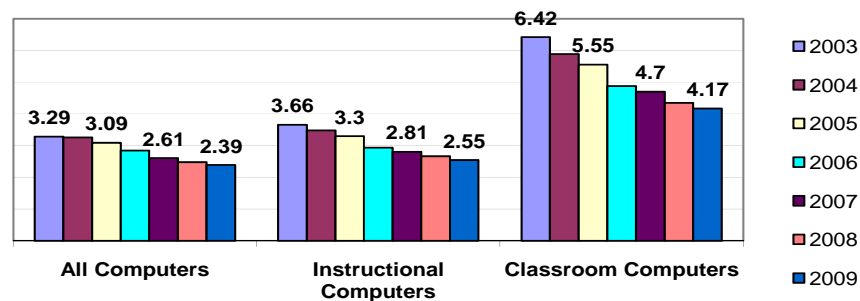
**Figure 22**



Higher ratios are noted when examining the number of students based on computers located in all instructional rooms and computers located only in classrooms. Figure 23 compares the three ratios: all computers, instructional computers, and classroom computers since 2003. The number of students per instructional computer has decreased from 3.66 in 2003 to 2.55 this year. While the number of students per classroom computer has also decreased, from 6.42 in 2003 to 4.17 this year; the ratio is still nearly double the number of students per all computers.

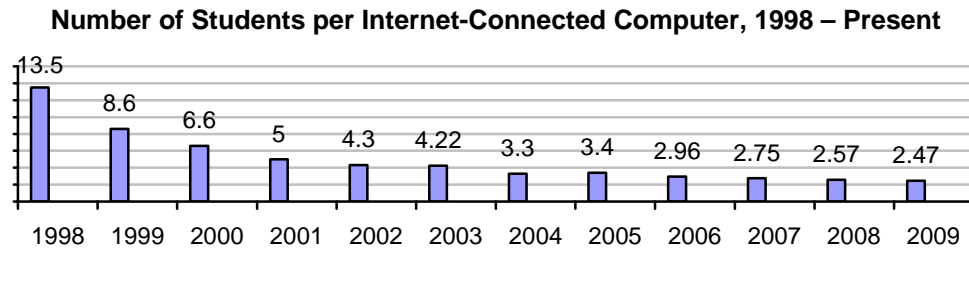
**Figure 23**

**Number of Students per Computer by Location, 2003 – Present**



The number of students per Internet-connected computer has also dropped consistently. Figure 24 charts Internet-connection ratios from 1998 to the present. This year there were 2.47 students per Internet-connected computer, compared to 13.5 students in 1998.

**Figure 24**



**Hardware item 4 – Technology in instructional rooms**

For this item, buildings report on a list of technologies the state believes should be available in instructional rooms based on current research and the eMINTS instructional model. As described earlier, eMINTS educators integrate technology into inquiry-based, student-centered, interdisciplinary, and collaborative teaching practices that result in improved student performance. Critical classroom resources include telephone access, multimedia-equipped and Internet-connected computers, and a teacher workstation that includes a dedicated projection device (LCD panel or other type of video projector), and access to a printer.

Table 25 summarizes the data reported this year. Over 90 percent of all rooms are equipped with at least one multimedia-equipped computer that is connected to the Internet. However, only two in three rooms have telephone access, and one in three has a full suite of classroom technology. The increasing use of cell phones might explain the lower telephone-access rates.

**Table 25**

|   | <b>Room Technology Status – 2009</b> |               |            |                   |        |            |             |              |              |
|---|--------------------------------------|---------------|------------|-------------------|--------|------------|-------------|--------------|--------------|
|   | <u>Labs</u>                          | <u>PreK-2</u> | <u>3-5</u> | <u>Classrooms</u> |        | <u>ACC</u> | <u>LMCs</u> | <u>Admin</u> | <u>Total</u> |
| <u>Total Rooms</u>  | 4,173                                | 14,135        | 13,453     | 14,336            | 19,588 | 1,996      | 2,293       | 69,974       | 13,358       |
| Percent rooms with:   |                                      |               |            |                   |        |            |             |              |              |
| • Telephone access  | 71%                                  | 66%           | 65%        | 67%               | 70%    | 74%        | 88%         | 68%          | 96%          |
| • Internet access (wired or wireless)   | 99%                                  | 99%           | 99%        | 99%               | 99%    | 97%        | 97%         | 99%          | 98%          |
| • ≥1 multimedia computer  | 96%                                  | 96%           | 96%        | 96%               | 95%    | 92%        | 94%         | 96%          | 93%          |
| • ≥1 Internet-connected computer  | 95%                                  | 95%           | 95%        | 94%               | 94%    | 91%        | 92%         | 94%          | 91%          |
| • ≥ Internet-connected multimedia computer, projection device, printer access | 75%                                  | 52%           | 65%        | 57%               | 55%    | 37%        | 59%         | 57%          | 19%          |

Table 26 compares the technology status in instructional rooms, 2006 to the present. Overall, computer labs, libraries, and classrooms have about the same access to computer technologies in terms of having at least one multimedia and Internet-connected computer. Although computer labs and classrooms have seen a marked increase, libraries continue to have greater access to telephones. While still far behind the other categories, the most dramatic increases have been seen in the final category that includes a projection device and access to a printer.

Table 26

**Computer Lab, Classroom, and Library Technologies, 2006 – Present**

|                                | <u>Computer Labs</u> |             |             |             |
|--------------------------------|----------------------|-------------|-------------|-------------|
|                                | <u>2006</u>          | <u>2007</u> | <u>2008</u> | <u>2009</u> |
| <u>Total Rooms</u>             | 4,305                | 4,566       | 4,169       | 4,173       |
| Percent rooms with:            |                      |             |             |             |
| • Telephone access             | 58%                  | 63%         | 67%         | 71%         |
| • Internet access              | 98%                  | 95%         | 98%         | 99%         |
| • Multimedia computer          | 95%                  | 93%         | 96%         | 96%         |
| • Internet-connected computer  | 93%                  | 91%         | 92%         | 95%         |
| • Complete teacher workstation | 59%                  | 63%         | 70%         | 75%         |
|                                | <u>Classrooms</u>    |             |             |             |
|                                | <u>2006</u>          | <u>2006</u> | <u>2006</u> | <u>2009</u> |
| <u>Total Rooms</u>             | 56,558               | 61,104      | 62,482      | 63,508      |
| Percent rooms with:            |                      |             |             |             |
| • Telephone access             | 60%                  | 62%         | 64%         | 68%         |
| • Internet access              | 98%                  | 98%         | 98%         | 99%         |
| • Multimedia computer          | 93%                  | 94%         | 94%         | 96%         |
| • Internet-connected computer  | 92%                  | 93%         | 93%         | 94%         |
| • Complete teacher workstation | 29%                  | 37%         | 45%         | 56%         |
|                                | <u>Libraries</u>     |             |             |             |
|                                | <u>2006</u>          | <u>2006</u> | <u>2006</u> | <u>2009</u> |
| <u>Total Rooms</u>             | 2,164                | 2,306       | 2,287       | 2,293       |
| Percent rooms with:            |                      |             |             |             |
| • Telephone access             | 84%                  | 86%         | 88%         | 88%         |
| • Internet access              | 98%                  | 96%         | 97%         | 97%         |
| • Multimedia computer          | 93%                  | 93%         | 93%         | 94%         |
| • Internet-connected computer  | 91%                  | 90%         | 91%         | 92%         |
| • Complete teacher workstation | 44%                  | 48%         | 53%         | 59%         |

**Hardware items 5 and 6 – Technical maintenance and repair <<Start back up here>>**

First addressed in 2003, item five asks for the length of time needed for technical problems or repairs to be resolved. As noted in Table 27, buildings have seen a marked decrease in the amount of time needed for typical problems or repairs. By 2007, almost 90 percent of buildings report a turn-around time of three or fewer working days. This year, nearly half the districts report a one-day period for resolving routine technical issues.

Table 27

**Percent Buildings Resolving Typical Technical Issues  
in Three Working Days or Sooner, 2006 – Present**

| <u>Percent Buildings</u> | <u>2004</u> | <u>2005</u> | <u>2006</u> | <u>2007</u> | <u>2008</u> | <u>2009</u> |
|--------------------------|-------------|-------------|-------------|-------------|-------------|-------------|
| 1 Day                    | 5%          | 32%         | 36%         | 42%         | 45%         | 48%         |
| 2 to 3 Days              | 51%         | 49%         | 45%         | 46%         | 43%         | 39%         |

**INTERNET CONNECTIVITY / DISTANCE LEARNING**

This section deals with building networking, Internet, and interconnectivity issues. Items address the systems in place that facilitate quality, secure, and safe access to people and information, both in and outside the school building.

### Connectivity item 1 – Internet bandwidth

The first Internet connectivity item asks buildings to indicate the type (size) of Internet connectivity and the delivery mode. While COT has collected Internet-related data since the first year, delivery mode data has only been collected since 2005. Following are definitions and an example of how to respond to the item:

*Bandwidth* – The speed of the telecommunications link between a computer and a local area network and/or an Internet service provider. [If two or more buildings share a T1 line, report each building as having access to 1.5mb.]

*Delivery mode* – The method used to link computers, network, and Internet service (e.g., fiber, copper wire, DSL, etc.).

Table 28 summarizes the status, kinds and means of building connectivity for the current year, while Table 29 provides select trend data, from 2005 to the present. As shown in Table 28, all but four of 2,250 buildings reported having direct connections to the Internet, with 20 buildings reporting connections under 385kb, and 2,135 buildings (95 percent) having a T1 or better connectivity. The most prevalent means of delivering bandwidth are fiber lines (at 66 percent) and copper lines (at 25 percent).

**Table 28**

| <b>Internet Access – 2009</b> |                  |                |                           |                  |                |
|-------------------------------|------------------|----------------|---------------------------|------------------|----------------|
| <u>Bandwidth</u>              | <u>Buildings</u> | <u>Percent</u> | <u>Delivery Mode</u>      | <u>Buildings</u> | <u>Percent</u> |
| 56kb – 384 kb                 | 20               | 1%             | Copper line               | 556              | 25%            |
| 385kb – 1.4mb                 | 91               | 4%             | Fiber                     | 1,474            | 66%            |
| 1.5mb (T1) – 9.9mb            | 1,062            | 47%            | DSL                       | 97               | 4%             |
| 10mb – 45mb                   | 523              | 23%            | Satellite                 | 4                | <1%            |
| 45mb – 100mb                  | 277              | 12%            | Other: <u>42 Wireless</u> | 101              | 4%             |
| >100mb                        | 273              | 12%            | None/Unknown              | 17               | 1%             |
| None                          | 4                | <1%            |                           |                  |                |
| Unknown                       | 20               | 1%             |                           |                  |                |

As shown in Table 29, the percent of buildings reporting direct Internet connectivity has remained steady at 99 percent. However, the percent of buildings with T1 or greater connectivity has grown substantially, from 79 percent in 2005 to 95 percent this year. And the percent having fiber connections has grown from 46 percent in 2005 to 66 percent this year. Note that, in 2008, the MOREnet Technology Network Program (TNP) served 518 K-12 institutions: 512 districts, four charter LEAs, and the state schools for the blind and deaf. TNP works with members to make sure they are receiving enough bandwidth to meet user needs.

**Table 29**

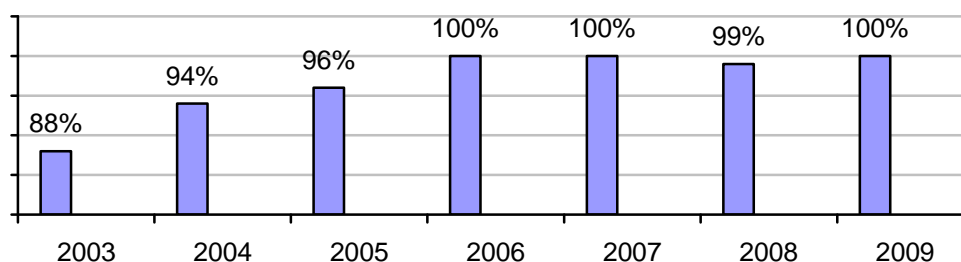
| <b>Internet Access, 2002 – Present</b> |             |             |             |             |             |
|--|-------------|-------------|-------------|-------------|-------------|
|  | <u>2005</u> | <u>2006</u> | <u>2007</u> | <u>2008</u> | <u>2009</u> |
| <u>Total number buildings</u>          | 2,211       | 2,229       | 2,218       | 2,248       | 2,250       |
| <b>BANDWIDTH</b>                       |             |             |             |             |             |
| • Percent with Internet access         | 99%         | 99%         | 99%         | 99%         | 99%         |
| • Percent with T1 or better            | 79%         | 83%         | 85%         | 92%         | 95%         |
| <b>DELIVERY MODE</b>                   |             |             |             |             |             |
| • Percent Fiber                        | 46%         | 50%         | 57%         | 61%         | 66%         |
| • Percent Copper                       | 38%         | 35%         | 30%         | 31%         | 25%         |

### Connectivity item 2 – Computer networking

Originally, this item had two parts – percentage of computers in the building connected through a local or wide area network and whether the building was connected to the district LAN or WAN. The item was revised in 2005 to deal only with computer networking, with the part about building connectivity moved to the District Census. Figure 30 reports on the percent of computers connected to a building (or district) network since 2003. As indicated in the table, the proportion of a building's computers connected to a LAN or WAN has grown steadily, from 88 percent in 2003 to 99 percent or higher since 2006.

**Figure 30**

#### **Computer Networking, 2003 – Present**



### Connectivity item 3 – Distance learning systems

This long-standing item addresses accessibility to instructional programming that is originated from outside the building. The item was updated in 2005 to further define and distinguish among five options:

*Interactive television (I-TV)* – Students receive instruction (usually in classroom setting) from a remote live teacher via two-way interactive (audio and video) instruction.

*Desktop video conferencing* – Students at computers receive two-way audio and video instruction from a remote live teacher.

*Web-based online instruction via Internet* – Students at computers receive packaged instruction without live audio and video interaction.

*Satellite Programming* – One-way instructional video signal received through satellite downlink dish.

*Cable Television* – One-way instructional video received through commercial or public television station(s).

Table 31 shows distance learning trend data since 2005. As listed in the table, the number of buildings reporting to have one or more distance learning systems in place has grown from 75 percent in 2005 to 81 percent in 2008. For 2003 through 2008, the most commonly used system was cable television, in place in over half of the buildings; this year web-based online instruction was the most commonly used. [Note that the state's new Virtual Instruction Program (MoVIP), which makes use of online instruction, went into effect in 2007-08.] While noninteractive online instruction increased from 32 percent to 56 percent, two-way desktop videoconferencing increased from 12 to 19 percent, use of interactive television has remained fairly steady at or near 20 percent, and use of satellite programming decreased from 18 to 10 percent.

Table 31

**Number and Percent of Buildings with Distance Learning Systems  
by System Type, 2005 – Present**

| Distance Learning System          | 2005 |     | 2006 |     | 2007 |     | 2008 |     | 2009 |     |
|-----------------------------------|------|-----|------|-----|------|-----|------|-----|------|-----|
|                                   | #    | %   | #    | %   | #    | %   | #    | %   | #    | %   |
| Cable television                  | 1140 | 51% | 1191 | 53% | 1175 | 53% | 1127 | 50% | 1064 | 47% |
| Satellite programming             | 399  | 18% | 405  | 18% | 351  | 16% | 304  | 14% | 218  | 10% |
| Interactive television            | 485  | 22% | 434  | 19% | 419  | 19% | 426  | 19% | 430  | 19% |
| Desktop videoconferencing         | 270  | 12% | 265  | 12% | 307  | 14% | 342  | 15% | 345  | 15% |
| Noninteractive online instruction | 703  | 32% | 807  | 36% | 945  | 43% | 144  | 6%  | 1271 | 56% |
| None                              | 551  | 25% | 510  | 23% | 483  | 22% | 435  | 19% | 423  | 19% |

### TECHNOLOGY USAGE

The remaining building items address how school faculty, staff, and students make use of available education technologies. Emphasis is placed on “routine” use, described as being used or implemented at least three times per week. As explained earlier, the Missouri School Improvement Program (MSIP) includes a standard pertaining to access and use of “Instructional Resources” that includes technology-based resources, and the scoring guide used for state approval of district technology plans also places emphasis on usage data. Both of these accountability measures factor in the following analyses.

#### Usage item 1 – Routine use of technology, by technology type

This item has typically asked how principals, teachers, and students use educational software, the Internet, and electronic resources. Note that the item helps track the impact of state and federal funding that promotes the use of educational technologies. It should also be noted that not all populations would be expected to make regular use of all the resources.

During this school-year, with funding from the Secretary of State and Missouri State Library, districts had access to the following online resources via their participation in the state-supported MOREnet Technology Network Program (TNP).

*EBSCOhost* – EBSCOhost Electronic Journals Service (EJS) is a gateway to thousands of journals containing millions of articles from hundreds of different publishers.

*Newsbank* – Newsbank is a comprehensive electronic database resource containing information from newspapers.

*Learning Express Library* – Learning Express Library is a database of over 300 online academic and licensing practice tests including SAT, ACT, GRE, LSAT, Advanced Placement, civil service, military, real estate, law enforcement, citizenship, TOEFL, ESL and basic skills for elementary, middle and high school skills improvement and much more.

Table 32 provides trend data since 2006 with regards to routine use of specific electronic resources by school administrators, teachers and students. While all statistics have increased since 2006, most increases are modest at best, and disappointing. As expected, administrators and teachers routinely use email, and teachers and students routinely use educational software, in general. The data related to the resources made available through TNP indicate that MOREnet and the Department should continue to advertise these resources. Staff have found, when interacting with teachers at conferences and workshops, that many teachers are unaware that the resources exist and are available free of charge.

**Table 32****Electronic Resource Usage Statistics by User Type, 2006 – Present**

| <u>Resource</u>         | <u>2006</u> | <u>Principals</u> |             |             |
|-------------------------|-------------|-------------------|-------------|-------------|
|                         |             | <u>2007</u>       | <u>2008</u> | <u>2009</u> |
| Educational software    | 44%         | 47%               | 49%         | 53%         |
| Email                   | 97%         | 98%               | 98%         | 98%         |
| EBSCOhost               | 16%         | 17%               | 16%         | 17%         |
| Electronic encyclopedia | 14%         | 16%               | 17%         | 20%         |
| Newsbank                | 5%          | 8%                | 9%          | 10%         |

| <u>Resource</u>         | <u>2006</u> | <u>Teachers</u> |             |             |
|-------------------------|-------------|-----------------|-------------|-------------|
|                         |             | <u>2006</u>     | <u>2006</u> | <u>2009</u> |
| Educational software    | 76%         | 76%             | 76%         | 83%         |
| Email                   | 94%         | 94%             | 94%         | 98%         |
| EBSCOhost               | 23%         | 23%             | 23%         | 26%         |
| Electronic encyclopedia | 30%         | 30%             | 30%         | 36%         |
| Newsbank                | 7%          | 7%              | 7%          | 15%         |

| <u>Resource</u>         | <u>2006</u> | <u>Students</u> |             |             |
|-------------------------|-------------|-----------------|-------------|-------------|
|                         |             | <u>2006</u>     | <u>2006</u> | <u>2009</u> |
| Educational software    | 79%         | 79%             | 79%         | 80%         |
| Email                   | 11%         | 11%             | 11%         | 15%         |
| EBSCOhost               | 22%         | 22%             | 22%         | 24%         |
| Electronic encyclopedia | 34%         | 34%             | 34%         | 38%         |
| Newsbank                | 7%          | 7%              | 7%          | 13%         |

**Usage item 2 – Routine technology use, by function**

Building contacts are asked to estimate the percentages of school administrators (principals), teachers, and students who routinely use computers and other technologies for specific functions. The tables below provide technology usage trend data since 2000. Table 33 presents data for principals, Table 34 reports teacher data, and Table 35 summarizes student data.

As detailed in Table 33, the areas where principals have shown the greatest increases in technology usage over the years include use of technology to: track student performance, manage student records (using spreadsheets or databases), conduct research, assess student performance, and produce media, web, or multimedia products or presentations for demonstration purposes. Since 2000, the most dramatic increases include using technology to: communicate with peers and experts (58 to 96 percent), produce media presentations (from 29 to 70 percent), track student performance (from 54 to 90 percent), and participate in online coursework, which has increased fourfold (from 4 to 16 percent).

The areas showing the largest increases between last year and this year include the use of technology to: produce media/multimedia products (from 66 to 70 percent), deliver and present instruction (from 44 to 48 percent), and assess student performance (from 78 to 81 percent).

**Table 33****Routine Use of Technology by Building Principals, 2000 – Present**

| <u>Technology Function</u>              | <u>2000</u> | <u>2001</u> | <u>2002</u> | <u>2003</u> | <u>2004</u> | <u>2005</u> | <u>2006</u> | <u>2007</u> | <u>2008</u> | <u>2009</u> |
|---|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Produce media/<br>presentation products | 29%         | 31%         | 43%         | 46%         | 50%         | 54%         | 57%         | 61%         | 66%         | 70%         |
| Produce written products                | 68%         | 56%         | 67%         | 73%         | 77%         | 79%         | 80%         | 82%         | 84%         | 85%         |
| Conduct online research                 | 62%         | 58%         | 69%         | 79%         | 80%         | 78%         | 81%         | 82%         | 84%         | 85%         |



|   |     |     |     |     |     |     |     |     |     |     |
|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Communicate with peers, experts, others | 58% | 48% | 63% | 79% | 87% | 93% | 95% | 95% | 96% | 96% |
| Communicate with parents and students   | NA  | NA  | NA  | NA  | NA  | 81% | 83% | 86% | 88% | 90% |
| Manage student records                  | 66% | 60% | 71% | 81% | 83% | 82% | 85% | 87% | 89% | 91% |
| Track student performance               | 54% | 56% | 67% | 78% | 81% | 80% | 84% | 85% | 88% | 90% |
| Assess student performance              | NA  | NA  | 58% | 67% | 72% | 71% | 74% | 76% | 78% | 81% |
| Deliver/present instruction             | 18% | 21% | 28% | 37% | 39% | 37% | 37% | 41% | 44% | 48% |
| Enroll in online coursework             | NA  | NA  | NA  | 4%  | 7%  | 11% | 11% | 12% | 14% | 16% |

Table 34, addressing teacher use data, indicates similar increases. By 2007, at least 90 percent of teachers use email to communicate with peers, experts, or others. By 2008, over 85 percent use technology to manage student records and track student performance. The areas showing the most increases since 2000, include using technology to: communicate with peers and experts (from 50 to 95 percent), manage student records (from 45 to 89 percent), produce media products (from 24 to 69 percent), email parents and students (from 46 to 86 percent), track student performance (from 52 to 89 percent), and participate in online coursework, which has more than tripled (from five to 19 percent).

The areas showing the largest increases between last year and this year include the use of technology to: communicate with parents and students (from 81 to 86 percent), produce media/multimedia products (from 64 to 69 percent), deliver and present instruction (from 73 to 77 percent), prepare lesson plans (from 77 to 81 percent), and assess student performance (from 82 to 85 percent).

**Table 34**

**Routine Use of Technology by Teachers, 2000 – Present**

| <u>Technology Function</u>              | <u>2000</u> | <u>2001</u> | <u>2002</u> | <u>2003</u> | <u>2004</u> | <u>2005</u> | <u>2006</u> | <u>2007</u> | <u>2008</u> | <u>2009</u> |
|---|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Produce media/presentation products     | 24%         | 29%         | 37%         | 43%         | 47%         | 48%         | 51%         | 59%         | 64%         | 69%         |
| Produce written products                | 66%         | 60%         | 71%         | 77%         | 81%         | 79%         | 80%         | 82%         | 84%         | 86%         |
| Conduct online research                 | 59%         | 56%         | 67%         | 74%         | 75%         | 75%         | 76%         | 77%         | 81%         | 83%         |
| Communicate with peers, experts, others | NA          | NA          | NA          | 50%         | 68%         | 85%         | 88%         | 90%         | 93%         | 95%         |
| Communicate with parents and students   | 46%         | 39%         | 53%         | 62%         | 66%         | 72%         | 74%         | 78%         | 81%         | 86%         |
| Prepare lesson plans                    | 47%         | 45%         | 59%         | 64%         | 66%         | 66%         | 68%         | 71%         | 77%         | 81%         |
| Manage student records                  | 45%         | 46%         | 56%         | 64%         | 70%         | 73%         | 76%         | 81%         | 86%         | 89%         |
| Track student performance               | 52%         | 48%         | 61%         | 69%         | 74%         | 75%         | 77%         | 82%         | 86%         | 89%         |
| Assess student performance              | NA          | NA          | 55%         | 64%         | 69%         | 70%         | 72%         | 78%         | 82%         | 85%         |
| Deliver/present instruction             | 26%         | 29%         | 38%         | 46%         | 51%         | 57%         | 60%         | 67%         | 73%         | 77%         |
| Enroll in online coursework             | NA          | NA          | NA          | 5%          | 9%          | 11%         | 12%         | 14%         | 17%         | 19%         |

Table 35 addresses student use of technology and indicates that while students routinely use technology more than they did in 2000, their usage rates generally lag behind rates for teachers and administrators – except in producing written products and conducting online research.

The areas showing the most increases since 2000 include using technology to produce media products (from 22 to 52 percent) and communicate with peers and experts which more than doubled (from 12 to 26 percent).

The areas showing the largest increases between last year and this year include the use of technology to: produce media/multimedia products (from 50 to 52 percent) and communicate with parents and students (from 17 to 19 percent).

**Table 35**

**Routine Use of Technology by Students, 2000 – Present**

| <u>Technology Function</u>                 | <u>2000</u> | <u>2001</u> | <u>2002</u> | <u>2003</u> | <u>2004</u> | <u>2005</u> | <u>2006</u> | <u>2007</u> | <u>2008</u> | <u>2009</u> |
|--|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Produce media/<br>presentation products    | 22%         | 23%         | 32%         | 37%         | 29%         | 40%         | 43%         | 46%         | 50%         | 52%         |
| Produce written products                   | 61%         | 52%         | 65%         | 68%         | 46%         | 59%         | 60%         | 61%         | 63%         | 64%         |
| Conduct online research                    | 57%         | 49%         | 59%         | 63%         | NA          | 53%         | 56%         | 58%         | 61%         | 62%         |
| Communicate with<br>peers, experts, others | NA          | NA          | NA          | NA          | 12%         | 20%         | 21%         | 24%         | 25%         | 26%         |
| Communicate with<br>parents and students   | NA          | NA          | NA          | NA          | 7%          | 13%         | 12%         | 24%         | 17%         | 19%         |
| Enroll in online<br>coursework             | NA          | NA          | NA          | NA          | 7%          | 2%          | 2%          | 4%          | 4%          | 5%          |

Usage item 3 – Technology integration support

This item asks building contacts to estimate employee FTE and/or non-employee contact hours related to helping teachers integrate technology into curriculum and instruction. In general, buildings engage employees rather than non-employees to provide instructional support.

Table 36 summarizes the data reported since 2003 and shows that integration assistance has evolved over time. In 2003, the school building administrator and/or a district technology staff person provided such assistance. Since 2006, a building would appear to rely less on district staff, with more integration help provided by the library media specialist and/or other educators in the building. The number of buildings with instructional technology specialists has grown from 24 to 46 percent, which seems to reflect the eMINTS trend data reported in Training item. As more buildings have instructional technology specialists and rely on library media specialists, fewer buildings report technical staff as providing integration support.

An interesting data anomaly for this year pertains to the teacher statistics. After noting years of increases, only 40 percent of buildings reported relying on teachers for instructional technology assistance in 2009. The decrease from 56 to 40 percent might be the result of several factors: the presence of more instructional technology specialists (as noted above), staff reductions and/or fewer buildings able to release teachers from class time to provide support for others because of declining budgets, and better reporting and cleansing of the data.

This year, Instructional Technology staff dedicated time to contact schools to verify the data reported and make necessary adjustments. Too much of the data reported was found to be inflated because staff completing the survey didn't fully understand that the question – that the question asked for FTE dedicated specifically for instructional technology support for other staff in the building – or failed to prorate staff time across buildings.

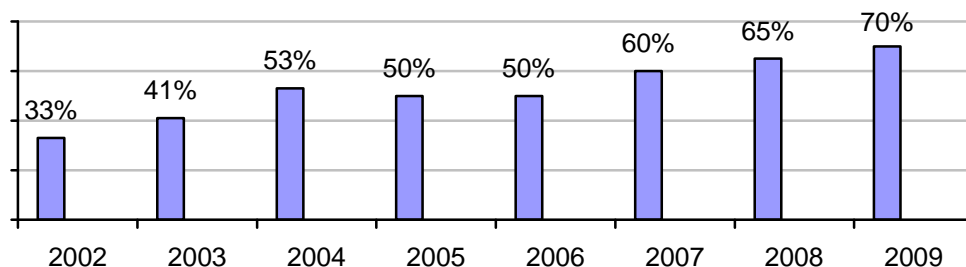
**Table 36****Building Technology Integration Support by Provider Type, 2003 – Present**

| <u>Position Providing Assistance</u> | <u>Percent Buildings Reporting</u> |             |             |             |             |             |             |
|--------------------------------------|------------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|
|                                      | <u>2003</u>                        | <u>2004</u> | <u>2005</u> | <u>2006</u> | <u>2007</u> | <u>2008</u> | <u>2009</u> |
| School building administrator        | 53%                                | 57%         | 53%         | 54%         | 50%         | 49%         | 55%         |
| Technology coordinator (any)         | 49%                                | 58%         | NA          | NA          | NA          | NA          | NA          |
| • District technical staff           | NA                                 | NA          | 47%         | 54%         | 44%         | 42%         | 33%         |
| • School technical staff             | NA                                 | NA          | 20%         | 21%         | 18%         | 18%         | 12%         |
| Teacher(s)                           | 46%                                | 48%         | 52%         | 55%         | 52%         | 56%         | 40%         |
| Library media specialist             | 43%                                | 54%         | 58%         | 60%         | 61%         | 62%         | 65%         |
| Instructional technology specialist  | 24%                                | 32%         | 34%         | 34%         | 37%         | 38%         | 46%         |

**Usage item 4 – Teacher technology integration**

Added in 2002, this item asks the building contact person to estimate the percent of teachers who fully integrate technology into curriculum and instruction. Based on the eMINTS instructional model, full integration is defined as the “ability to use instructional strategies that promote authentic project-based learning opportunities, student teamwork, collaboration and communication using technology in the classroom curriculum.”

Table 37 provides fully integrated data reported since 2002. As indicated below, the percent of teachers able to fully integrate technology in their classroom teaching has more than doubled. In 2002, the median building indicated 33 percent of teacher’s fully integrating technology, compared to 70 percent this year.

**Table 37****Percent Teachers Integrating Technology, 2002 – Present****Usage item 5 – Technology-mediated feedback systems**

This last item was also added 2002, to align with the 2002-06 state plan. The item asks about the technology-mediated feedback systems in place that are designed to facilitate effective communication between schools and patrons, including students and parents. This item distinguishes between one-way information dissemination (such as a Website or mailing) and interactive systems that help patrons to access and/or provide specific information or feedback back to the school.

Table 38 reports on data collected this year, and Table 39 provides longitudinal data since 2002. This year all but two buildings indicate using one or more district or school-supported feedback system. Almost all buildings reported use of email, and three in five reported use of voice mail. New data reported this year includes use of automated calling or texting.

**Table 38****Building Use of Technology-mediated Feedback by System Type – 2009**

| <u>Feedback System</u>         | <u>Buildings</u> | <u>Percent</u> |
|--------------------------------|------------------|----------------|
| Automated absentee system      | 774              | 34%            |
| Electronic bulletin board      | 666              | 30%            |
| Email                          | 2,194            | 98%            |
| Homework hotline via web       | 488              | 23%            |
| Homework hotline via telephone | 289              | 13%            |
| Listserves                     | 322              | 14%            |
| Voice Mail                     | 1,445            | 64%            |
| Other:                         |                  |                |
| Electronic Grade Book = 275,   |                  |                |
| Auto Call/Text = 130,          |                  |                |
| Blackboard/Moodle = 41         | 719              | 32%            |
| None                           | 26               | 1%             |

As shown in Table 39, the prevailing technology-mediated feedback systems in place since 2002 are email and voicemail, which were found in 98 and 94 percent of buildings, respectively. While increasing numbers of buildings offer automated absentee call-in systems (34 percent) and web-based homework hotlines (23 percent), few buildings offer listserves (14 percent) or telephone-based homework hotlines (13 percent).

The feedback systems showing the largest increases between last year and this year include: automated absentee call-in system (from 26 to 34 percent), web-based homework hotlines (from 17 to 23 percent), and voice mail (from 60 to 64 percent).

**Table 39****Percent Buildings with Technology-mediated Feedback by System Type, 2002 – Present**

| <u>Feedback System</u>         | <u>Percent Buildings</u> |             |             |             |             |             |             |             |
|--------------------------------|--------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
|                                | <u>2002</u>              | <u>2003</u> | <u>2004</u> | <u>2005</u> | <u>2006</u> | <u>2007</u> | <u>2008</u> | <u>2009</u> |
| Email                          | 39%                      | 89%         | 94%         | 94%         | 95%         | 95%         | 96%         | 98%         |
| Voice mail                     | 26%                      | 47%         | 47%         | 50%         | 54%         | 57%         | 60%         | 64%         |
| Listserves                     | 1%                       | 16%         | 14%         | 13%         | 16%         | 18%         | 15%         | 14%         |
| Automated absentee call system | 8%                       | 13%         | 13%         | 19%         | 21%         | 23%         | 26%         | 34%         |
| Homework hotline via telephone | 10%                      | 12%         | 13%         | 15%         | 13%         | 12%         | 12%         | 13%         |
| Homework hotline via Web       | 3%                       | 7%          | 8%          | 12%         | 14%         | 16%         | 17%         | 23%         |

## Appendix A: Census Surveys with Response Totals

### 2009 Missouri Census of Technology

### DISTRICT Level Census Form

**N= 551**

Complete this census form to reflect district technology status as of **March 1**.

Consult the Core Data Manual and [Help](#) file, call (573) 751-8247, or e-mail: [instrtech@dese.mo.gov](mailto:instrtech@dese.mo.gov) for assistance as needed.

- 1) Year district technology plan was last approved by DESE: [205 \(2007\)](#) [58 \(2008\)](#) [288 \(2009\)](#).
- 2) Board-approved education technology standards and population(s) that must meet the standards. (Check ALL that apply)

| STANDARDS  | Districts/<br>LEAs | Percent<br>LEAs |
|--|--------------------|-----------------|
| Locally-developed  | 466                | 84.6%           |
| Adopted National Educational Technology Standards (ISTE) | 248                | 45.0%           |
| Adopted Standards for Technological Literacy (ITEA)      | 66                 | 12.0%           |
| Other: ( <a href="#">Show-Me Standards = 9</a> )         | 18                 | 3.3%            |
| None   | 21                 | 3.8%            |

| STUDENT STANDARDS  |      |         |
|--------------------|------|---------|
| Grade Span         | LEAs | Percent |
| K-2                | 482  | 87.5%   |
| 3-5                | 500  | 90.7%   |
| 6-8                | 516  | 93.7%   |
| 9-12               | 421  | 76.4%   |
| Area Career Center | 59   | *100%   |
| None               | 25   | 4.5%    |

\*59 of 59 ACCs

| STAFF STANDARDS  |      |         |
|------------------|------|---------|
| Staff Type       | LEAs | Percent |
| Administrators   | 468  | 84.9%   |
| Teachers         | 479  | 86.9%   |
| Support Services | 423  | 76.8%   |
| None             | 72   | 13.1%   |

- 3) Estimated total FTE of district-level staff or total hours of those directly responsible for technical maintenance and support of hardware. (Check one in each category)

| EMPLOYEES |      |         |               |
|-----------|------|---------|---------------|
| Status    | LEAs | Percent | Median<br>FTE |
| Yes       | 511  | 93%     | 1.0           |
| No        | 40   | 8%      | Na            |

| NON-EMPLOYEES |      |         |                 |
|---------------|------|---------|-----------------|
| Status        | LEAs | Percent | Median<br>Hours |
| Yes           | 210  | 38%     | 100             |
| No            | 341  | 62%     | Na              |

- 4) District-supported administrative systems. (Check ALL that apply)

| SYSTEM                    | LEAs | Percent |
|---------------------------|------|---------|
| Accounting/budget/payroll | 531  | 96%     |
| Class website hosting     | 372  | 68%     |
| Communication/email       | 530  | 96%     |
| Course scheduling         | 460  | 83%     |
| Discipline                | 490  | 89%     |
| Distance education        | 266  | 48%     |
| Extra-curricular schedule | 248  | 45%     |
| Food Service              | 474  | 86%     |
| Grade book                | 501  | 91%     |
| Health Service            | 452  | 82%     |
| Human resources           | 270  | 49%     |
| IEP management            | 452  | 82%     |
| Instructional management  | 229  | 42%     |
| Inventory                 | 354  | 64%     |
| Library catalog           | 512  | 93%     |
| School safety             | 205  | 37%     |
| Student attendance        | 530  | 96%     |
| Student fees              | 328  | 60%     |
| Student performance       | 413  | 75%     |
| Teacher evaluations       | 212  | 38%     |
| Technical support         | 356  | 65%     |
| Transportation            | 279  | 51%     |
| None                      | 1    | .18%    |

- 5) All buildings in district are connected through a wide or local area network. [488 / 88.6%](#) Yes [63 / 11.4%](#) No

- 6) Core content area(s) in which technology is integrated. (Check ALL that apply)  
[540 / 98.0%](#)Communication Arts [528 / 95.9%](#)Mathematics [535 / 97.1%](#)Science [516 / 93.7%](#)Social Studies
- 7) Estimated percentage of following populations with district-provided email accounts.

| GRADES | LEAs | Percent | Median |
|--------|------|---------|--------|
| PreK-2 | 16   | 2.9%    | 100%   |
| 3-5    | 45   | 8.2%    | 35%    |
| 6-8    | 75   | 13.6%   | 100%   |
| 9-12   | 141  | 25.6%   | 25%    |
| None   | 394  | 71.5%   | Na     |

| STAFF TYPE             | LEAs | Percent | Median |
|------------------------|------|---------|--------|
| Administrators         | 532  | 96.6%   | 100%   |
| Teachers               | 529  | 96.0%   | 100%   |
| Support services staff | 522  | 94.7%   | 100%   |
| None                   | 18   | 3.3%    | Na     |

- 8) Estimated percentage of district 8<sup>th</sup> graders who are technologically literate. [Median =](#)
- 9) Amount budgeted for technology for current year. [\\$150,543,272 \(Average = \\$273,218\) \(Median = \\$50,000\)](#)
- 10) Dollar value of district E-rate discount for current year (per FCDLs). [\\$27,161,036 \(Average = \\$49,294\) \(Median = \\$6,725\)](#)
- 11) Estimated percentage of E-rate discount used to support education technology. [Median = 50%](#)

## 2009 Missouri Census of Technology

## School Building Level Census Form

**N= 2250**

### PLANNING

- 1) Type of building technology plan: [122 / 5%](#)Stand-alone plan [2107 / 94%](#) Integrated in district plan [21 / 1%](#) No building plan

### TRAINING

- 1) Estimated percentage of faculty/staff in the school building at each skill level of education technology use.

| FACULTY/STAFF          | Beginner | Intermediate | Advanced | Total |
|------------------------|----------|--------------|----------|-------|
| Administrator(s)       | 4%       | 65%          | 31%      | 100%  |
| Teachers               | 12%      | 60%          | 27%      | 100%  |
| Support services staff | 25%      | 53%          | 21%      | 100%  |

- 2) Number of teachers in the school participating in education technology-related professional development (including eMINTS).

| HOURS COMPLETED    | Buildings | Percent Buildings | Teachers |
|--------------------|-----------|-------------------|----------|
| 0 hours            | 531       | 24%               | 8,764    |
| 1 to 15 hours      | 2044      | 91%               | 46,109   |
| 16 to 30 hours     | 926       | 41%               | 8,192    |
| More than 30 hours | 734       | 33%               | 4,899    |
| Total              |           |                   | 67,964   |

[Median Teacher: 1-15 Hours](#)

- 3) Number of eMINTS-trained teachers in school building.

| eMINTS PROGRAMS                   | None (Buildings) | Completed year 1 only | Completed both years  | Total Teachers |
|-----------------------------------|------------------|-----------------------|-----------------------|----------------|
| Comprehensive eMINTS for Teachers | 1,741            | 585 in 210 Buildings  | 422 in 1167 Buildings | 1007           |
| eMINTS for Ed-Tech Specialists    | 2,164            | 42 in 28 Buildings    | 103 in 65 Buildings   | 145            |
| Other two-year eMINTS programs    | 2,130            | 192 in 55 Buildings   | 392 in 87 Buildings   | 584            |

### HARDWARE AND SUPPORT

- 1) Estimated total FTE of school building staff or total hours of others directly responsible for technical maintenance and/or support of hardware. (Check all that apply)

| EMPLOYEE TYPE                 | Number Buildings | Percent Buildings | Median FTE |
|-------------------------------|------------------|-------------------|------------|
| District staff                | 1935             | 86%               | 0.50       |
| School certificated staff     | 462              | 21%               | 0.15       |
| School non-certificated staff | 429              | 19%               | 0.50       |
| None                          | 151              | 7%                | Na         |

[Median Building Total: 1.15 FTE](#)

Estimated total hours of others directly responsible for technical maintenance and/or support of hardware. (Continued)

| NON-EMPLOYEE<br>SERVICE PROVIDER | Total<br>Hours | Number<br>Buildings | Percent<br>Buildings | Median<br>Hours |
|----------------------------------|----------------|---------------------|----------------------|-----------------|
| Students                         | 12,819         | 248                 | 11%                  | 18              |
| Parents/community members        | 103            | 13                  | 1%                   | 1               |
| Vendors/contractors              | 19,289         | 516                 | 23%                  | 5               |
| None                             | Na             | 1,553               | 69%                  | Na              |

2) Computers by type and location within school building.

| COMPUTER PLATFORM | Labs   | Instructional Rooms |        |        |        |       | LMCs   | Admin. | Total   |
|-------------------|--------|---------------------|--------|--------|--------|-------|--------|--------|---------|
|                   |        | PreK-2              | 3-5    | 6-8    | 9-12   | ACC   |        |        |         |
| APPLE/MAC         |        |                     |        |        |        |       |        |        |         |
| Less Than 1 Year  | 2,308  | 419                 | 939    | 685    | 1,509  | 154   | 286    | 215    | 6,515   |
| 1 – 3 Years       | 6,106  | 2,349               | 3,145  | 3,295  | 3,090  | 208   | 2,083  | 626    | 20,902  |
| 4 – 5 Years       | 2,775  | 1,291               | 1,528  | 1,655  | 738    | 155   | 916    | 255    | 9,313   |
| 6 Years or More   | 1,746  | 1,820               | 1,582  | 1,285  | 1,110  | 191   | 454    | 152    | 8,340   |
| PC COMPATIBLE     |        |                     |        |        |        |       |        |        |         |
| Less Than 1 Year  | 15,291 | 2,753               | 4,366  | 4,409  | 8,128  | 1,122 | 3,177  | 2,687  | 41,933  |
| 1 – 3 Years       | 41,323 | 10,735              | 16,484 | 15,543 | 24,591 | 3,288 | 10,271 | 9,886  | 132,121 |
| 4 – 5 Years       | 25,361 | 8,940               | 13,167 | 11,134 | 17,301 | 3,089 | 7,017  | 5,770  | 91,779  |
| 6 Years or More   | 11,308 | 6,792               | 8,440  | 6,413  | 7,594  | 1,169 | 3,227  | 2,573  | 47,516  |
| HANDHELDS         | 1,004  | 1,461               | 4,194  | 2,817  | 2,607  | 207   | 827    | 1,377  | 14,494  |

**Computer Summary Statistics\***

| Location /<br>Computer Device | Computer<br>Labs | Class Rooms  |              |              |              |             |               | LMCs         | Rooms<br>Total | Offices      | Total         |
|-------------------------------|------------------|--------------|--------------|--------------|--------------|-------------|---------------|--------------|----------------|--------------|---------------|
|                               |                  | K-2          | 3-5          | 6-8          | 9-12         | ACC         | Sub-total     |              |                |              |               |
| <b>APPLE/MAC</b>              |                  |              |              |              |              |             |               |              |                |              |               |
| Less than 1 Year              | 2308             | 419          | 939          | 685          | 1509         | 154         | 3706          | 286          | 6300           | 215          | 6515          |
| 1 – 3 Years                   | 6106             | 2349         | 3145         | 3295         | 3090         | 208         | 12087         | 2083         | 20276          | 626          | 20902         |
| 4 – 5 Years                   | 2775             | 1291         | 1528         | 1655         | 738          | 155         | 5367          | 916          | 9058           | 255          | 9313          |
| 6 Years or More               | 1746             | 1820         | 1582         | 1285         | 1110         | 191         | 5988          | 454          | 8188           | 152          | 8340          |
| Sub-total                     | 12935            | 5879         | 7194         | 6920         | 6447         | 708         | 27148         | 3739         | 43822          | 1248         | 45070         |
| <b>PC/PC Compatible</b>       |                  |              |              |              |              |             |               |              |                |              |               |
| Less than 1 Year              | 15291            | 2753         | 4366         | 4409         | 8128         | 1122        | 20778         | 3177         | 39246          | 2687         | 41933         |
| 1 – 3 Years                   | 41323            | 10735        | 16484        | 15543        | 24591        | 3288        | 70641         | 10271        | 122235         | 9886         | 132121        |
| 4 – 5 Years                   | 25361            | 8940         | 13167        | 11134        | 17301        | 3089        | 53631         | 7017         | 86009          | 5770         | 91779         |
| 6 Years or More               | 11308            | 6792         | 8440         | 6413         | 7594         | 1169        | 30408         | 3227         | 44943          | 2573         | 47516         |
| Sub-total                     | 93283            | 29220        | 42457        | 37499        | 57614        | 8668        | 175458        | 23692        | 292433         | 20916        | 313349        |
| <b>Total Computers</b>        | <b>106218</b>    | <b>35099</b> | <b>49651</b> | <b>44419</b> | <b>64061</b> | <b>9376</b> | <b>202606</b> | <b>27431</b> | <b>336255</b>  | <b>22164</b> | <b>358419</b> |
| <b>Student Ratios</b>         | <b>8.40</b>      | <b>5.79</b>  | <b>4.11</b>  | <b>4.56</b>  | <b>4.41</b>  | <b>Na</b>   | <b>4.40</b>   | <b>Na</b>    | <b>2.65</b>    | <b>Na</b>    | <b>2.49</b>   |
| <b>HANDHELDS</b>              | <b>1004</b>      | <b>1461</b>  | <b>4194</b>  | <b>2817</b>  | <b>2607</b>  | <b>207</b>  | <b>11286</b>  | <b>827</b>   | <b>13117</b>   | <b>1377</b>  | <b>14494</b>  |
| <b>TOTAL DEVICES</b>          | <b>107222</b>    | <b>36560</b> | <b>53845</b> | <b>47236</b> | <b>66668</b> | <b>9583</b> | <b>213892</b> | <b>28258</b> | <b>349372</b>  | <b>23541</b> | <b>372913</b> |
| <b>Student Ratios</b>         | <b>8.32</b>      | <b>5.56</b>  | <b>3.79</b>  | <b>4.28</b>  | <b>4.24</b>  | <b>Na</b>   | <b>4.17</b>   | <b>Na</b>    | <b>2.55</b>    | <b>Na</b>    | <b>2.39</b>   |

\* Ratios are based on the 2008-09 K-12 student population: 892,078 [203,753 K-2, 204,005 3-5, 202,379 6-8, and 282,441 9-12]

3) Internet connected and multimedia equipped computers by location within school building.

| COMPUTER /<br>CONNECTION TYPE | Labs    | Classrooms |        |        |        |       | LMCs   | Admin. | Total   |
|-------------------------------|---------|------------|--------|--------|--------|-------|--------|--------|---------|
|                               |         | PreK-2     | 3-5    | 6-8    | 9-12   | ACC   |        |        |         |
| Multimedia-Equipped           | 103,444 | 33,453     | 48,134 | 42,083 | 61,632 | 8,527 | 26,275 | 22,161 | 345,709 |
| Internet-Connected            | 108,211 | 34,429     | 50,884 | 44,054 | 65,304 | 8,703 | 27,794 | 23,458 | 362,837 |
| Wired Connection              |         |            |        |        |        |       |        |        |         |
| Desktops                      | 85,102  | 29,259     | 40,324 | 32,952 | 50,607 | 7,273 | 22,691 | 18,941 | 287,149 |
| Laptops                       | 1,954   | 821        | 1,567  | 1,212  | 1,908  | 407   | 615    | 1,562  | 10,046  |
| Handhelds                     | 58      | 345        | 894    | 573    | 229    | 58    | 7      | 203    | 2,367   |
| Wireless Connection           |         |            |        |        |        |       |        |        |         |
| Desktops                      | 2,011   | 308        | 1,836  | 553    | 1,163  | 143   | 412    | 173    | 6,599   |
| Laptops                       | 18,854  | 3,471      | 5,789  | 8,338  | 10,876 | 797   | 3,906  | 1,916  | 53,947  |
| Handhelds                     | 232     | 225        | 474    | 426    | 521    | 25    | 163    | 663    | 2,729   |

**Multimedia and Internet Computer Summary Statistics**

| Location /<br>Computer Device | Labs   | Classrooms Rooms |       |       |       |        |          | Library<br>Centers | Rooms<br>Total | Admin.<br>Offices | TOTAL  |
|-------------------------------|--------|------------------|-------|-------|-------|--------|----------|--------------------|----------------|-------------------|--------|
|                               |        | PreK-2           | 3-5   | 6-8   | 9-12  | Career | subtotal |                    |                |                   |        |
| INTERNET                      |        |                  |       |       |       |        |          |                    |                |                   |        |
| Number                        | 108211 | 34429            | 50884 | 44054 | 65304 | 8703   | 203374   | 27794              | 339379         | 23458             | 362837 |
| Percent of All                | 29.8   | 9.5              | 14.0  | 12.1  | 17.9  | 2.4    | 56.0     | 7.7                | 93.5           | 6.5               | 100.0  |
| Student Ratios                | 8.24   | 5.90             | 4.01  | 4.59  | 4.33  | Na     | 4.39     | Na                 | 2.63           | Na                | 2.46   |
| MULTIMEDIA                    |        |                  |       |       |       |        |          |                    |                |                   |        |
| Number                        | 103444 | 33453            | 48134 | 42083 | 61632 | 8527   | 193829   | 26275              | 323549         | 22161             | 345709 |
| Percent of All                | 29.9   | 9.7              | 13.9  | 12.2  | 17.8  | 2.5    | 56.1     | 7.6                | 93.6           | 6.4               | 100.0  |
| Student Ratios                | 8.62   | 6.08             | 4.24  | 4.81  | 4.58  | Na     | 4.60     | Na                 | 2.76           | Na                | 2.58   |

- 4) Technology by type and location within school building.

|   | Labs         | Classrooms    |               |               |               |              | LMCs         | Rooms<br>Total | Admin.        | Total         |
|---|--------------|---------------|---------------|---------------|---------------|--------------|--------------|----------------|---------------|---------------|
|   |              | PreK-2        | 3-5           | 6-8           | 9-12          | ACC          |              |                |               |               |
| TOTAL ROOMS   | 4,173        | 14,135        | 13,453        | 14,336        | 19,588        | 1,996        | 2,293        | 69,974         | 13,358        | 83,332        |
| Percent rooms with...   |              |               |               |               |               |              |              |                |               |               |
| telephone access  | 71%<br>2,966 | 66%<br>9,259  | 65%<br>8,780  | 67%<br>9,645  | 70%<br>13,788 | 74%<br>1,474 | 88%<br>2,020 | 68%<br>47,932  | 96%<br>12,831 | 73%<br>60,763 |
| Internet access (wired or wireless)   | 99%<br>4,120 | 99%<br>14,010 | 99%<br>13,324 | 99%<br>14,172 | 99%<br>19,485 | 97%<br>1,942 | 97%<br>2,218 | 99%<br>69,271  | 98%<br>13,045 | 99%<br>82,316 |
| one or more multimedia equipped computers   | 96%<br>4,003 | 96%<br>13,568 | 96%<br>12,945 | 96%<br>13,710 | 95%<br>18,653 | 92%<br>1,846 | 94%<br>2,147 | 96%<br>66,872  | 93%<br>12,395 | 95%<br>79,267 |
| one or more multimedia computers connected to Internet  | 95%<br>3,978 | 95%<br>13,407 | 95%<br>12,813 | 94%<br>13,470 | 94%<br>18,492 | 91%<br>1,817 | 92%<br>2,116 | 94%<br>66,093  | 91%<br>12,149 | 94%<br>78,242 |
| one+ Internet-connected multimedia computer with access to a printer, and a dedicated projection device | 75%<br>3,112 | 52%<br>7,375  | 65%<br>8,693  | 57%<br>8,115  | 55%<br>10,709 | 37%<br>737   | 59%<br>1,357 | 57%<br>40,098  | 19%<br>2,535  | 51%<br>42,633 |

- 5) Estimated typical (average) timeframe for resolving minor or routine technical problems/repairs. (Check One)

| NUMBER WORKING DAYS | Buildings | Percent |
|---------------------|-----------|---------|
| 1 day               | 1,084     | 48%     |
| 2 to 3 days         | 886       | 39%     |
| 4 to 6 days         | 187       | 8%      |
| 7 or more days      | 93        | 4%      |

- 6) Estimated percentage of computers in working order on a typical (average) day Median = 98%.

**INTERNET CONNECTIVITY- DISTANCE LEARNING**

- 1) School building Internet connection by bandwidth and delivery mode. (Check one in each column)

| BANDWIDTH          | Buildings | Percent | DELIVERY MODE        | Buildings | Percent |
|--------------------|-----------|---------|----------------------|-----------|---------|
| 56kb – 384 kb      | 20        | 1%      | Copper line          | 556       | 25%     |
| 385kb – 1.4mb      | 91        | 4%      | Fiber                | 1,474     | 66%     |
| 1.5mb (T1) – 9.9mb | 1,062     | 47%     | DSL                  | 97        | 4%      |
| 10mb – 45mb        | 523       | 23%     | Satellite            | 4         | <1%     |
| 45mb – 100mb       | 277       | 12%     | Other: (Wireless=31) | 101       | 4%      |
| >100mb             | 273       | 12%     | None/Unknown         | 17        | 1%      |
| None               | 4         | <1%     |                      |           |         |

- 2) Estimated percentage of computers connected to school building LAN (or district WAN) Median = 100%

- 3) Distance learning system(s) available to students in school building. (Check ALL that apply)

| DISTANCE LEARNING SYSTEM                                    | Buildings | Percent |
|---|-----------|---------|
| I-TV: two-way interactive (audio and video) television      | 430       | 19%     |
| Desktop video conferencing: two-way interactive instruction | 345       | 15%     |
| Web-based online instruction via Internet: non-interactive  | 1,271     | 56%     |
| Satellite: one-way instructional video                      | 218       | 10%     |
| Cable TV: one-way instructional video                       | 1,064     | 47%     |
| Other: (United Streaming = 76, Moodle = 11)                 | 130       | 6%      |
| None  | 423       | 19%     |



## TECHNOLOGY USAGE

- 1) Estimated percentage of administrators, teachers, and students routinely using following applications.

| APPLICATION             | Administrators | Teachers | Students |
|-------------------------|----------------|----------|----------|
| Educational software    | 53%            | 83%      | 80%      |
| Email                   | 98%            | 98%      | 15%      |
| EBSCO host              | 17%            | 26%      | 24%      |
| Electronic encyclopedia | 20%            | 36%      | 38%      |
| Newsbank                | 10%            | 15%      | 13%      |

- 2) Estimated percentage of administrators, teachers, and students routinely using computers for following functions.

| FUNCTION   | Administrators | Teachers | Students |
|--|----------------|----------|----------|
| Produce media, web, or multimedia products to demonstrate learning, make presentations | 70%            | 69%      | 52%      |
| Produce written or print products to demonstrate learning, make presentations          | 85%            | 86%      | 64%      |
| Communicate with peers, experts, others  | 96%            | 95%      | 26%      |
| Communicate with parents and students  | 90%            | 86%      | 19%      |
| Conduct online research  | 85%            | 83%      | 62%      |
| Participate in online courses (this year)  | 16%            | 19%      | 5%       |
| Manage student records (spreadsheet/database)  | 91%            | 89%      | Na       |
| Track student performance  | 90%            | 89%      | Na       |
| Assess student performance   | 81%            | 85%      | Na       |
| Deliver and present instruction  | 48%            | 77%      | Na       |
| Prepare lesson plan(s)   | Na             | 81%      | Na       |

- 3) Estimated total FTE of staff or others directly responsible for integration of technology into curriculum and instruction.  
(Check all that apply)

| EMPLOYEE TYPE   | Number Buildings | Percent Buildings | Median FTE |
|---|------------------|-------------------|------------|
| Instructional tech specialist   | 1,044            | 46%               | 0.25       |
| Library/media specialist  | 1,462            | 65%               | 0.10       |
| School administrator  | 1,243            | 55%               | 0.10       |
| Teacher   | 890              | 40%               | 0.20       |
| School technical staff  | 273              | 12%               | 0.25       |
| District technical staff  | 752              | 33%               | 0.25       |
| Other: Program Coordinators = 108<br>(such as curriculum, instruction, other) | 145              | 6%                | 0.25       |
| None  | 91               | 4%                | Na         |

Median Building Total: 1.40 FTE

| NON-EMPLOYEE SERVICE PROVIDER            | Total Hours | Number Buildings | Percent Buildings | Median Hours |
|--|-------------|------------------|-------------------|--------------|
| Students                                 | 552         | 43               | 2%                | 3            |
| Regional center/RPDC                     | 524         | 95               | 4%                | 3            |
| Other: Contracted services /vendors = 22 | 1,158       | 76               | 3%                | Na           |
| None                                     | Na          | 2,052            | 91%               | Na           |

- 4) Estimated percentage of teaching staff fully integrating technology into curriculum and instruction. Median = 70%

- 5) School (or district) supported technology-mediated feedback. (Check ALL that apply)

| FEEDBACK SYSTEM  | Buildings | Percent |
|--|-----------|---------|
| Automated absentee system  | 774       | 34%     |
| Electronic bulletin board  | 666       | 30%     |
| Email  | 2,194     | 98%     |
| Homework hotline via web   | 488       | 23%     |
| Homework hotline via telephone   | 289       | 13%     |
| Listserve  | 322       | 14%     |
| Voice Mail   | 1,445     | 64%     |
| Other: Electronic Grade Book = 275<br>Auto Call/Text = 130<br>Blackboard/Moodle = 41 | 719       | 32%     |
| None   | 26        | 1%      |